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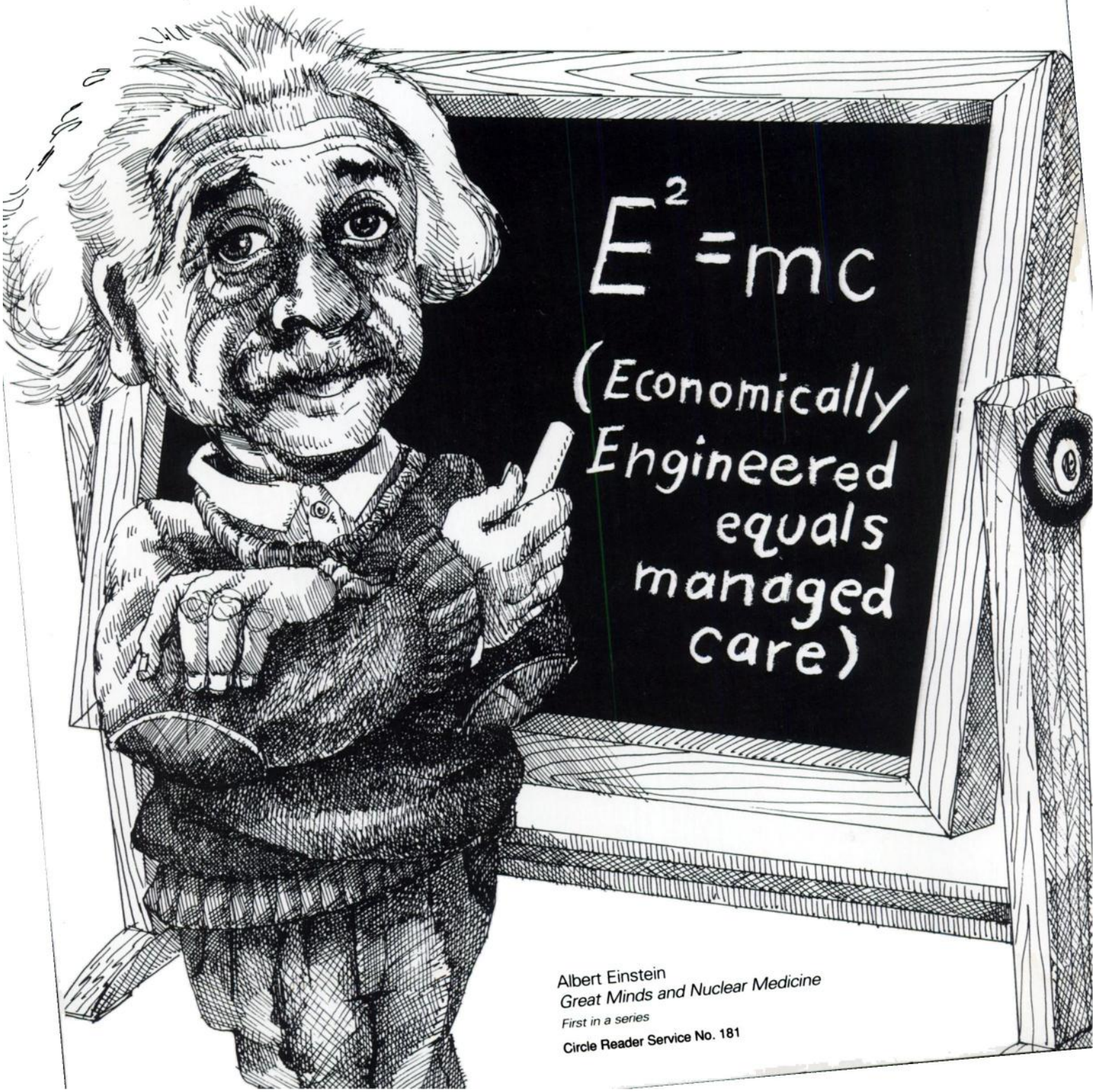

Albert Einstein
Great Minds and Nuclear Medicine
First in a series

Circle Reader Service No. 181

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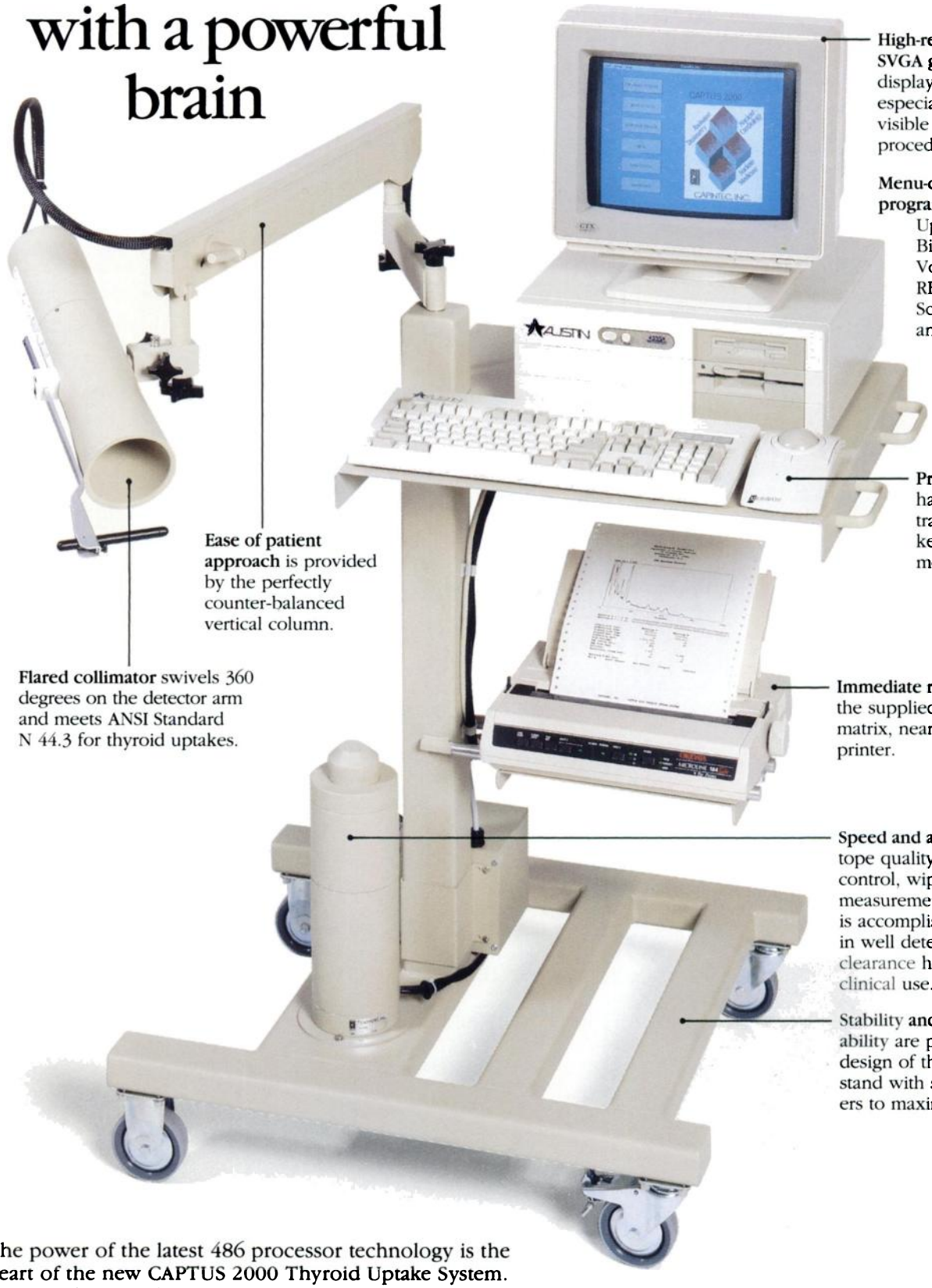

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Join more than 8000 of your colleagues in celebrating the 41st Annual Meeting of the Society of Nuclear Medicine in Orlando Florida, June 5-8, 1994. Participate in the intensive educational program, review posters, discuss the most recent developments with colleagues, and join any of a host of much talked about extracurricular activities. Don't miss this opportunity to learn, mingle with your colleagues, and visit with the exhibitors.

Refresher and state-of-the art continuing education courses in chemistry, physics, quality assurance, cardiovascular nuclear medicine, PET, SPECT and NMR will supply up-to-the-minute approaches and procedures for all clinical settings.

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This years presentation of over 1000 scientific papers and posters includes a distillation of the latest advancements and finest work achieved by outstanding scientists and physicians in the field of nuclear medicine. These papers, presented by the original authors, with over 30 subjects to choose from, will provide a unique opportunity for enhancing your knowledge or exploring new avenues in correlative areas of nuclear medicine. Ample time is allotted at these presentations for questions and discussions.

An extensive display of scientific posters and exhibits will augment the presentation.

TECHNOLOGIST PROGRAM

The ever-increasing importance of the role of the nuclear medicine technologist will be explored in our Technologist Program, and over 70 hours of clinical updates will provide chief and staff technologists with the latest in basic, intermediate, and advanced studies. This program will broaden expertise and enhance the technologist's contribution to nuclear medicine.

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EXPOSITION

All the major manufacturers of nuclear medicine products and services more than 100 in all-will be on hand to explain and demonstrate the most technologically-advanced equipment. Several companies will present User Meetings to give an in-depth understanding of their products.

REGISTRATION

	Before May 6	After May 6
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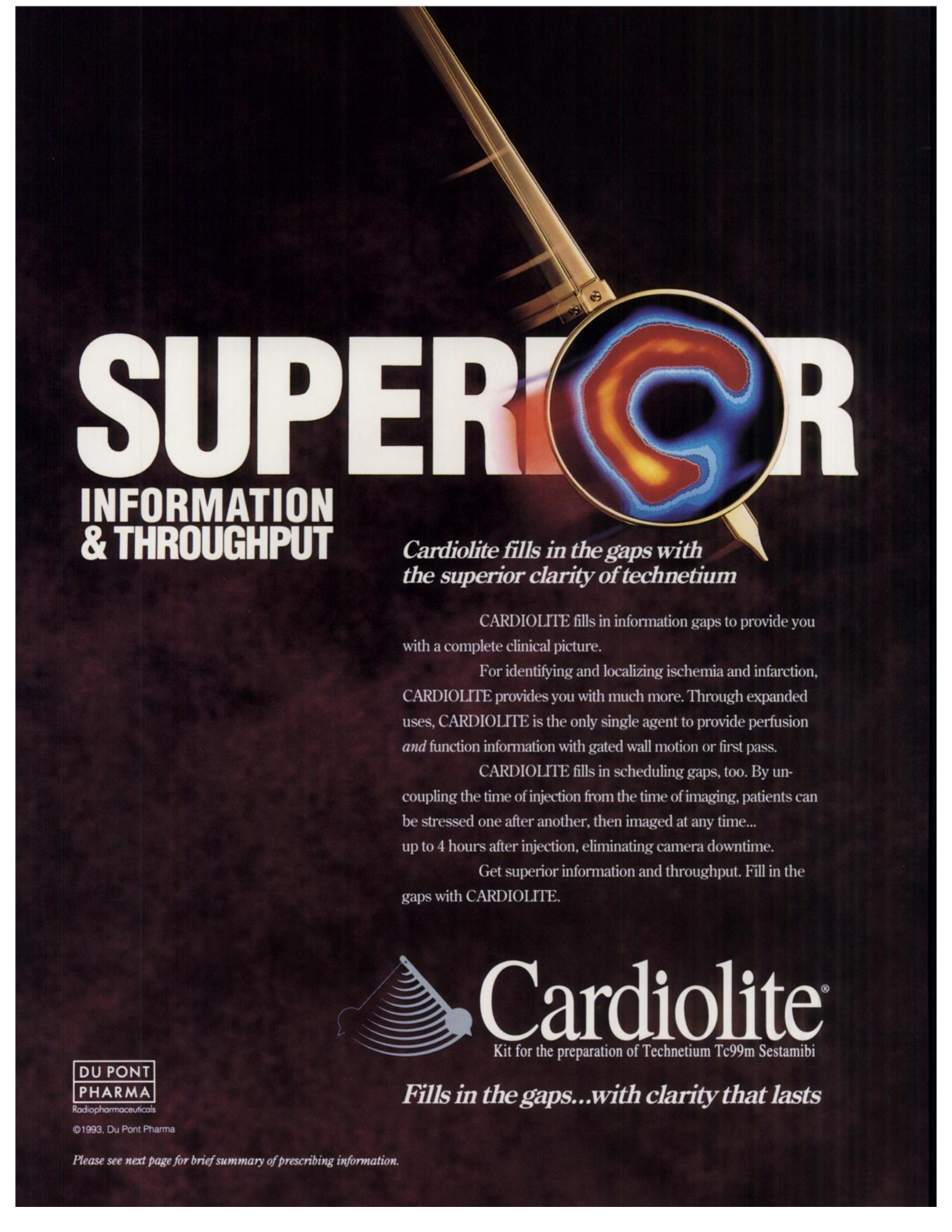

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CARDIOLITE fills in information gaps to provide you with a complete clinical picture.

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Cardiolite®

Kit for the preparation of Technetium Tc99m Sestamibi

Fills in the gaps...with clarity that lasts

DU PONT PHARMA
Radiopharmaceuticals

Please see next page for brief summary of prescribing information.

Brief Summary

Cardiolite®

Kit for the preparation of Technetium Tc99m Sestamibi

FOR DIAGNOSTIC USE

DESCRIPTION: Each 5ml vial contains a sterile, non-pyrogenic, lyophilized mixture of:

Tetrakis (2-methoxy isobutyl isonitrile) Copper (I) tetrafluoroborate - 1.0mg
Sodium Citrate Dihydrate - 2.6mg
L-Cysteine Hydrochloride Monohydrate - 1.0mg
Mannitol - 20mg
Stannous Chloride, Dihydrate, minimum ($SnCl_2 \cdot 2H_2O$) - 0.025mg
Stannous Chloride, Dihydrate, ($SnCl_2 \cdot 2H_2O$) - 0.075mg
Tin Chloride (Stannous and Stannic) Dihydrate, maximum (as $SnCl_2 \cdot 2H_2O$) - 0.086mg

Prior to lyophilization the pH is 5.3-5.9. The contents of the vial are lyophilized and stored under nitrogen.

This drug is administered by intravenous injection for diagnostic use after reconstitution with sterile, non-pyrogenic, oxidant-free Sodium Pertechnetate Tc99m Injection.The pH of the reconstituted product is 5.5 (5.0-6.0). No bacteriostatic preservative is present.

The precise structure of the technetium complex is $Tc99m[MIBI]_6^+$ where MIBI is 2-methoxy isobutyl isonitrile.

INDICATIONS AND USAGE: CARDIOLITE, Kit for the preparation of Technetium Tc99m Sestamibi is a myocardial perfusion agent that is useful in the evaluation of ischemic heart disease. CARDIOLITE, Kit for the preparation of Technetium Tc99m Sestamibi is useful in distinguishing normal from abnormal myocardium and in the localization of the abnormality, in patients with suspected myocardial infarction, ischemic heart disease or coronary artery disease. Evaluation of ischemic heart disease or coronary artery disease is accomplished using rest and stress techniques.

CARDIOLITE, Kit for the preparation of Technetium Tc99m Sestamibi, is also useful in the evaluation of myocardial function using the first pass technique.

Rest-exercise imaging with Tc99m Sestamibi in conjunction with other diagnostic information may be used to evaluate ischemic heart disease and its localization.

In clinical trials, using a template consisting of the anterior wall, inferior-posterior wall and isolated apex, localization in the anterior or inferior-posterior wall in patients with suspected angina pectoris or coronary artery disease was shown. Disease localization isolated to the apex has not been established. Tc99m Sestamibi has not been studied or evaluated in other cardiac diseases.

It is usually not possible to differentiate recent from old myocardial infarction or to differentiate recent myocardial infarction from ischemia.

CONTRAINDICATIONS: None known.

WARNINGS: In studying patients in whom cardiac disease is known or suspected, care should be taken to assure continuous monitoring and treatment in accordance with safe, accepted clinical procedure. Infrequently, death has occurred 4 to 24 hours after Tc99m Sestamibi use and is usually associated with exercise stress testing (See Precautions).

PRECAUTIONS:

GENERAL

The contents of the vial are intended only for use in the preparation of Technetium Tc99m Sestamibi and are not to be administered directly to the patient without first undergoing the preparative procedure.

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.

Contents of the kit before preparation are not radioactive. However, after the Sodium Pertechnetate Tc99m Injection is added, adequate shielding of the final preparation must be maintained.

The components of the kit are sterile and non-pyrogenic. It is essential to follow directions carefully and to adhere to strict aseptic procedures during preparation.

Technetium Tc99m labeling reactions involved depend on maintaining the stannous ion in the reduced state. Hence, Sodium Pertechnetate Tc99m Injection containing oxidants should not be used.

Technetium Tc99m Sestamibi should not be used more than six hours after preparation.

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.

Stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

The most frequent exercise stress test endpoints, which resulted in termination of the test during controlled Tc99m Sestamibi studies (two-thirds were cardiac patients) were:

Fatigue	35%
Dyspnea	17%
Chest Pain	16%
ST-depression	7%
Arrhythmia	1%

Carcinogenesis, Mutagenesis, Impairment of Fertility

In comparison with most other diagnostic technetium labeled radiopharmaceuticals, the radiation dose to the ovaries (1.5rads/30mCi at rest, 1.2 rads/30mCi at exercise) is high. Minimal exposure (ALARA) is necessary in women of childbearing capability. (See Dosimetry subsection in DOSAGE AND ADMINISTRATION section.)

The active intermediate, $[Cu(MIBI)_4]BF_4$, was evaluated for genotoxic potential in a battery of five tests. No genotoxic activity was observed in the Ames, CHO/HPRT and sister chromatid exchange tests (all *in vitro*). At cytotoxic concentrations (≥ 20μg/ml), an increase in cells with chromosome aberrations was observed in the *in vitro* human lymphocyte assay. $[Cu(MIBI)_4]BF_4$ did not show genotoxic effects in the *in vivo* mouse micronucleus test at a dose which caused systemic and bone marrow toxicity (9mg/kg, > 600 × maximal human dose).

Pregnancy Category C

Animal reproduction and teratogenicity studies have not been conducted with Technetium Tc99m Sestamibi. It is also not known whether Technetium Tc99m Sestamibi can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. There have been no studies in pregnant women. Technetium Tc99m Sestamibi should be given to a pregnant woman only if clearly needed.

Nursing Mothers

Technetium Tc99m Pertechnetate is excreted in human milk during lactation. It is not known whether Technetium Tc99m Sestamibi is excreted in human milk. Therefore, formula feedings should be substituted for breast feedings.

Pediatric Use

Safety and effectiveness in children below the age of 18 have not been established.

ADVERSE REACTIONS: During clinical trials, approximately 8% of patients experienced a transient metallic or bitter taste immediately after the injection of Technetium Tc99m Sestamibi. A few cases of transient headache, flushing and non-itching rash have also been attributed to administration of the agent. Cases of angina, chest pain, and death have occurred (See WARNINGS and PRECAUTIONS). The following adverse reactions have been rarely reported: signs and symptoms consistent with seizure occurring shortly after administration of the agent; transient arthritis in the wrist joint; and severe hypersensitivity, which was characterized by dyspnea, hypotension, bradycardia, asthenia and vomiting within two hours after a second injection of Technetium Tc99m Sestamibi.

DOSAGE AND ADMINISTRATION: The suggested dose range for I.V. administration in a single dose to be employed in the average patient (70kg) is:

370-1110MBq (10-30mCi)

The dose administered should be the lowest required to provide an adequate study consistent with ALARA principles (see also PRECAUTIONS).

When used in the diagnosis of myocardial infarction, imaging should be completed within four hours after administration.

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

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

Store at 15-25°C before and after reconstitution.

RADIATION DOSIMETRY: The radiation doses to organs and tissues of an average patient (70kg) per 1110MBq (30mCi) of Technetium Tc99m Sestamibi injected intravenously are shown in Table 4.

Table 4. Radiation Absorbed Doses from Tc99m Sestamibi

	Estimated Radiation Absorbed Dose			
	REST			
	2.0 hour void		4.8 hour void	
Organ	rads/ 30mCi	mGy/ 1110MBq	rads/ 30mCi	mGy/ 1110MBq
Breasts	0.2	2.0	0.2	1.9
Gallbladder Wall	2.0	20.0	2.0	20.0
Small Intestine	3.0	30.0	3.0	30.0
Upper Large Intestine Wall	5.4	55.5	5.4	55.5
Lower Large Intestine Wall	3.9	40.0	4.2	41.1
Stomach Wall	0.6	6.1	0.6	5.8
Heart Wall	0.5	5.1	0.5	4.9
Kidneys	2.0	20.0	2.0	20.0
Liver	0.6	5.8	0.6	5.7
Lungs	0.3	2.8	0.3	2.7
Bone Surfaces	0.7	6.8	0.7	6.4
Thyroid	0.7	7.0	0.7	6.8
Ovaries	1.5	15.5	1.6	15.5
Testes	0.3	3.4	0.4	3.9
Red Marrow	0.5	5.1	0.5	5.0
Urinary Bladder Wall	2.0	20.0	4.2	41.1
Total Body	0.5	4.8	0.5	4.8

	STRESS			
	2.0 hour void		4.8 hour void	
Organ	rads/ 30mCi	mGy/ 1110MBq	rads/ 30mCi	mGy/ 1110MBq
Breasts	0.2	2.0	0.2	1.8
Gallbladder Wall	2.8	28.9	2.8	27.8
Small Intestine	2.4	24.4	2.4	24.4
Upper Large Intestine Wall	4.5	44.4	4.5	44.4
Lower Large Intestine Wall	3.3	32.2	3.3	32.2
Stomach Wall	0.5	5.3	0.5	5.2
Heart Wall	0.5	5.6	0.5	5.3
Kidneys	1.7	16.7	1.7	16.7
Liver	0.4	4.2	0.4	4.1
Lungs	0.3	2.6	0.2	2.4
Bone Surfaces	0.6	6.2	0.6	6.0
Thyroid	0.3	2.7	0.2	2.4
Ovaries	1.2	12.2	1.3	13.3
Testes	0.3	3.1	0.3	3.4
Red Marrow	0.5	4.6	0.5	4.4
Urinary Bladder Wall	1.5	15.5	3.0	30.0
Total Body	0.4	4.2	0.4	4.2

Radiopharmaceutical Internal Dose Information Center, July 1990, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831, (615) 576-3449.

HOW SUPPLIED: Du Pont Radiopharmaceutical's CARDIOLITE®, Kit for the Preparation of Technetium Tc99m Sestamibi, is supplied as a 5ml vial in kits of two (2), five (5) and thirty (30) vials, sterile and non-pyrogenic.

Prior to lyophilization the pH is between 5.3-5.9. The contents of the vials are lyophilized and stored under nitrogen. Store at 15-25°C before and after reconstitution. Technetium Tc99m Sestamibi contains no preservatives. Included in each two (2) vial kit are one (1) package insert, six (6) vial shield labels and six (6) radiation warning labels. Included in each five (5) vial kit are one (1) package insert, six (6) vial shield labels and six (6) radiation warning labels. Included in each thirty (30) vial kit are one (1) package insert, thirty (30) vial shield labels and thirty (30) radiation warning labels.

The U.S. Nuclear Regulatory Commission has approved this reagent kit for distribution to persons licensed to use byproduct material pursuant to section 35.11 and section 35.200 of Title 10 CFR Part 35, to persons who hold an equivalent license issued by an Agreement State, and, outside the United States, to persons authorized by the appropriate authority.

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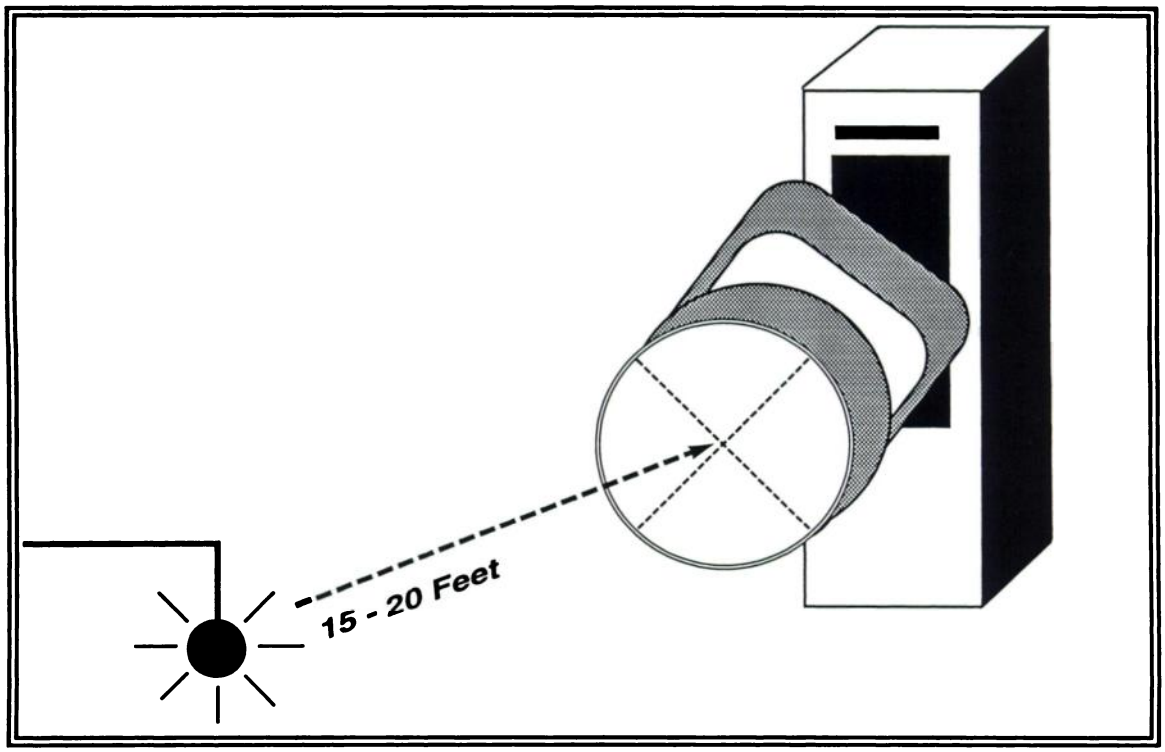

1. Place a 5 mCi point source of Tc-99m at least 15 feet away from the collimator face and collect 1 million counts with your collimator. Defects to be noted are: Linear streaks and cold defects.

2. The next evaluation is with a line source filled with 100 uCi of Tc-99m making an image at 8, 10, and 12 inches from the collimator face. Note defects.

3. Another evaluation can be done by imaging a SPECT phantom filled with 10 mCi Tc-99m. Defects to be noted: Ring artifacts.

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PALLIATION OF PAIN DEMONSTRATED IN THE MAJORITY OF PATIENTS AT THE RECOMMENDED DOSE.

Metastron overall response rate (% of patients).[1,4,7]

Pain relief evaluations included diaries, records of medication taken, sleep patterns, bone scans, and Karnofsky index.

*Open-label study of 137 patients who received 111-148 MBq, 3.0-4.0 mCi of Metastron.[4]

† Open-label study of 83 patients who received 150 MBq, ~4 mCi or more of Metastron.[1]

‡ Double-blind, crossover study of 26 patients who received 150 MBq, ~4 mCi of Metastron or placebo.[7]

ADJUNCTIVELY DELAYS THE MEDIAN TIME TO PROGRESSION OF PAIN BY 7 MONTHS OVER RADIOTHERAPY ALONE.

Median time to requirement for additional radiotherapy at new pain site.§[3]

§ From a multicenter, double-blind study of 126 patients who received a single injection of either Metastron 400 MBq, 10.8 mCi or placebo with fractionated doses of local field radiotherapy (20-30 Gy).[3]

HIGHLY EFFECTIVE NON-NARCOTIC THERAPY.

▼ Metastron may reduce or eliminate the need for dose escalation of narcotic analgesics.[2-4]

GENERALLY WELL TOLERATED.

▼ A depression of white blood cell (20%) and platelet (30%) levels may occur in patients treated with Metastron — clinically significant toxicity is rare.[2]

AN IMPROVED QUALITY OF LIFE FOR PATIENTS.

▼ Metastron may improve patient quality of life, as measured by assessments of mood, mobility, appetite, sleep pattern, and analgesic consumption.[1-5,7]

▼ Proven in 7 years of clinical experience in more than 6000 patients worldwide.[2]

Please see following page for full prescribing information.

Introducing

METASTRON®

(STRONTIUM-89 CHLORIDE INJECTION)

A new way to manage metastatic bone pain.

Introducing

METASTRON®

(STRONTIUM-89 CHLORIDE INJECTION)

A new way to manage metastatic bone pain.

Consult your radiation safety officer for product availability or call Amersham Healthcare/ Medi-Physics Technical Services at 1-800-554-0157.

Metastron® (Strontium-89 Chloride Injection)

Description: Metastron is a sterile, non-pyrogenic, aqueous solution of Strontium-89 Chloride for intravenous administration. The solution contains no preservative.

Each milliliter contains:	Strontium Chloride	10.9 - 22.6 mg
	Water for Injection	q.s. to 1 mL

The radioactive concentration is 37 MBq/mL, 1 mCi/mL and the specific activity is 2.96 - 6.17 MBq/mg, 80-167 µCi/mg at calibration. The pH of the solution is 4 - 7.5.

Physical Characteristics: Strontium-89 decays by beta emission with a physical half-life of 50.5 days. The maximum beta energy is 1.463 MeV (100%). The maximum range of ß- from Strontium-89 in tissue is approximately 8 mm.

Radioactive decay factors to be applied to the stated value for radioactive concentration at calibration, when calculating injection volumes at the time of administration, are given in Table 1.

Table 1: Decay of Strontium-89

Day*	Factor	Day*	Factor	Day*	Factor	Day*	Factor
-24	1.39	-12	1.18	+6	0.92	+18	0.78
-22	1.35	-10	1.15	+8	0.90	+20	0.76
-20	1.32	-8	1.12	+10	0.87	+22	0.74
-18	1.28	-6	1.09	+12	0.85	+24	0.72
-16	1.25	-4	1.06	+14	0.83	+26	0.70
-14	1.21	-2	1.03	+16	0.80	+28	0.68
		0 = calibration	1.00				

*Days before (-) or after (+) the calibration date stated on the vial.

Clinical Pharmacology: Following intravenous injection, soluble strontium compounds behave like their calcium analogs, clearing rapidly from the blood and selectively localizing in bone mineral. Uptake of strontium by bone occurs preferentially in sites of active osteogenesis; thus primary bone tumors and areas of metastatic involvement (blastic lesions) can accumulate significantly greater concentrations of strontium than surrounding normal bone.

Strontium-89 Chloride is retained in metastatic bone lesions much longer than in normal bone, where turnover is about 14 days. In patients with extensive skeletal metastases, well over half of the injected dose is retained in the bones.

Excretion pathways are two-thirds urinary and one-third fecal in patients with bone metastases. Urinary excretion is higher in people without bone lesions. Urinary excretion is greatest in the first two days following injection.

Strontium-89 is a pure beta emitter and Strontium-89 Chloride selectively irradiates sites of primary and metastatic bone involvement with minimal irradiation of soft tissues distant from the bone lesions. (The maximum range in tissue is 8 mm; maximum energy is 1.463 MeV.) Mean absorbed radiation doses are listed under the **Radiation Dosimetry** section.

Clinical trials have examined relief of pain in cancer patients who have received therapy for bone metastases (external radiation to indexed sites) but in whom persistent pain recurred. In a multi-center Canadian placebo-controlled trial of 126 patients, pain relief occurred in more patients treated with a single injection of Metastron than in patients treated with an injection of placebo. Results are given in the following tables.

Table 2 compares the percentage and number of patients treated with Metastron or placebo who had reduced pain and no increase in analgesic or radiotherapy re-treatment.

Table 2: Comparison of the effects of Strontium-89 and placebo, as adjunct to radiotherapy, on treatment outcome over time.

	Months Post-Treatment					
	1	2	3	4	5	6
Metastron	71.4% (n=42)	78.9% (n=38)	60.6% (n=33)	59.3% (n=27)	36.4% (n=22)	63.6% (n=22)
Placebo	61.4% (n=44)	57.1% (n=35)	55.9% (n=34)	25.0% (n=24)	31.8% (n=22)	35.0% (n=20)

At each visit, treatment success, defined as a reduction in a patient's pain score without any increase in analgesic intake and without any supplementary radiotherapy at the index site, was more frequent among patients assigned to Metastron than to placebo.

Table 3 compares the number and percentage of patients treated with Metastron or placebo as an adjunct to radiotherapy who were pain free without analgesic at the intervals shown.

Table 3: Comparison of the effects of Strontium-89 and placebo, as adjunct to radiotherapy, on reduction of pain score and analgesic score to zero.

	Months Post-Treatment						
	1	2	3	4	5	6	9
Metastron	6	5	5	3	4	4	2
	14.3% (n=42)	13.2% (n=38)	15.2% (n=33)	11.1% (n=27)	18.2% (n=22)	18.2% (n=22)	18.2% (n=11)
Placebo	3	3	2	0	1	1	0
	6.8% (n=44)	8.6% (n=35)	5.9% (n=34)	(n=24)	4.5% (n=22)	5% (n=20)	(n=17)

The number of patients classified at each visit as treatment successes who were pain free at the index site *and* required no analgesics was consistently higher in the Metastron group.

New pain sites were less frequent in patients treated with Metastron.

In another clinical trial, pain relief was greater in a group of patients treated with Metastron compared with a group treated with non-radioactive strontium-88.

Indications and Usage: Metastron (Strontium-89 Chloride Injection) is indicated for the relief of bone pain in patients with painful skeletal metastases.

The presence of bone metastases should be confirmed prior to therapy.

Contraindications: None known.

Warnings: Use of Metastron in patients with evidence of seriously compromised bone marrow from previous therapy or disease infiltration is not recommended unless the potential benefit of the treatment outweighs its risks. Bone marrow toxicity is to be expected following the administration of Metastron, particularly white blood cells and platelets. The extent of toxicity is variable. It is recommended that the patient's peripheral blood cell counts be monitored at least once every other week. Typically, platelets will be depressed by about 30% compared to pre-administration levels. The nadir of platelet depression in most patients is found between 12 and 16 weeks following administration of Metastron. White blood cells are usually depressed to a varying extent compared to pre-administration levels. Thereafter, recovery occurs slowly, typically reaching pre-administration levels six months after treatment unless the patient's disease or additional therapy intervenes.

In considering repeat administration of Metastron, the patient's hematologic response to the initial dose, current platelet level and other evidence of marrow depletion should be carefully evaluated.

Verification of dose and patient identification is necessary prior to administration because Metastron delivers a relatively high dose of radioactivity.

Metastron may cause fetal harm when administered to a pregnant woman. There are no adequate and well-controlled studies in pregnant women. If this drug is used during pregnancy, or if the patient becomes pregnant while receiving this drug, the patient should be apprised of the potential hazard to the fetus. Women of childbearing potential should be advised to avoid becoming pregnant.

Precautions: Metastron is not indicated for use in patients with cancer not involving bone. Metastron should be used with caution in patients with platelet counts below 60,000 and white cell counts below 2,400.

Radiopharmaceuticals should only be used 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.

Metastron, like other radioactive drugs, must be handled with care and appropriate safety measures taken to minimize radiation to clinical personnel.

In view of the delayed onset of pain relief, typically 7 to 20 days post injection, administration of Metastron to patients with very short life expectancy is not recommended.

A calcium-like flushing sensation has been observed in patients following a rapid (less than 30-second injection) administration.

Special precautions, such as urinary catheterization, should be taken following administration to patients who are incontinent to minimize the risk of radioactive contamination of clothing, bed linen and the patient's environment.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Data from a repetitive dose animal study suggests that Strontium-89 Chloride is a potential carcinogen. Thirty-three of 40 rats injected with Strontium-89 Chloride in ten consecutive monthly doses of either 250 or 350 µCi/kg developed malignant bone tumors after a latency period of approximately 9 months. No neoplasia was observed in the control animals. Treatment with Strontium-89 Chloride should be restricted to patients with well documented metastatic bone disease.

Adequate studies with Strontium-89 Chloride have not been performed to evaluate mutagenic potential or effects on fertility.

Pregnancy: Teratogenic effects.

Pregnancy Category D. See **Warnings** section.

Nursing Mothers: Because Strontium acts as a calcium analog, secretion of Strontium-89 Chloride into human milk is likely. It is recommended that nursing be discontinued by mothers about to receive intravenous Strontium-89 Chloride. It is not known whether this drug is excreted in human milk.

Pediatric Use: Safety and effectiveness in children below the age of 18 years have not been established.

Adverse Reactions: A single case of fatal septicemia following leukopenia was reported during clinical trials. Most severe reactions of marrow toxicity can be managed by conventional means.

A small number of patients have reported a transient increase in bone pain at 36 to 72 hours after injection. This is usually mild and self-limiting, and controllable with analgesics. A single patient reported chills and fever 12 hours after injection without long-term sequelae.

Dosage and Administration: The recommended dose of Metastron is 148 MBq, 4 mCi, administered by slow intravenous injection (1-2 minutes). Alternatively, a dose of 1.5 - 2.2 MBq/kg, 40-60 µCi/kg body weight may be used.

Repeated administrations of Metastron should be based on an individual patient's response to therapy, current symptoms, and hematologic status, and are generally not recommended at intervals of less than 90 days.

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

Radiation Dosimetry: The estimated radiation dose that would be delivered over time by the intravenous injection of 37 MBq, 1 mCi of Strontium-89 to a normal healthy adult is given in Table 4. Data are taken from the ICRP publication "Radiation Dose to Patients from Radiopharmaceuticals"-ICRP #53, Vol. 18 No. 1-4, Page 171, Pergamon Press, 1988.

Table 4: Strontium-89 Dosimetry

Organ	mGy/MBq	rad/mCi	Organ	mGy/MBq	rad/mCi
Bone Surface	17.0	63.0	Testes	0.8	2.9
Red Bone Marrow	11.0	40.7	Ovaries	0.8	2.9
Lower Bowel Wall	4.7	17.4	Uterine Wall	0.8	2.9
Bladder Wall	1.3	4.8	Kidneys	0.8	2.9

When blastic osseous metastases are present, significantly enhanced localization of the radiopharmaceutical will occur with correspondingly higher doses to the metastases compared with normal bones and other organs.

The radiation dose hazard in handling Strontium-89 Chloride injection during dose dispensing and administration is similar to that from phosphorus-32. The beta emission has a range in water of about 8 mm (max.) and in glass of about 3 mm, but the bremsstrahlung radiation may augment the contact dose.

Measured values of the dose on the surface of the unshielded vial are about 65 mR/minute/mCi.

It is recommended that the vial be kept inside its transportation shield whenever possible.

How Supplied: Metastron is supplied in a 10 mL vial containing 148 MBq, 4 mCi. The vial is shipped in a transportation shield with approximately 3 mm lead wall thickness, package insert, and two therapeutic agent warning labels.

The vial and its contents should be stored inside its transportation container at room temperature (15-25° C, 59-77° F).

The calibration date (for radioactivity content) and expiration date are quoted on the vial label. The expiration date will be 28 days after calibration. Stability studies have shown no change in any of the product characteristics monitored during routine product quality control over the period from manufacture to expiration.

This radiopharmaceutical is licensed by the Illinois Department of Nuclear Safety for distribution to persons licensed pursuant to 32 Illinois Adm. Code 330.260 (a) and Part 335 Subpart F.335.5010 or under equivalent licenses of the USNRC or an Agreement State.

THIS PRODUCT INFORMATION ISSUED JUNE, 1993.

Product Code: SMS.2PA

Manufactured by:

Amersham International plc
Amersham, England

Medi-Physics, Inc.
2636 S. Clearbrook Drive
Arlington Heights, Illinois 60005

References:

1. Laing AH, Ackery DM, Bayly RJ, et al. Strontium-89 chloride for pain palliation in prostatic skeletal malignancy. *Br J Radiol.* 1991;64:816-822. 2. Data on file, Amersham International plc, Amersham, England. 3. Porter AT, McEwan AJB, Powe JE, et al. Results of a randomized phase-III trial to evaluate the efficacy of strontium-89 adjuvant to local field external beam irradiation in the management of endocrine resistant metastatic prostate cancer. *Int J Radiat Oncol Biol Phys.* 1993;25:805-813. 4. Robinson RG, Blake GM, Preston DF, et al. Strontium-89: treatment results and kinetics in patients with painful metastatic prostate and breast cancer in bone. *RadioGraphics.* 1989;9(2):271-281. 5. Blake GM, Zivanovic MA, McEwan AJ, et al. ^{89}Sr radionuclide therapy: dosimetry and haematological toxicity in two patients with metastasising prostatic carcinoma. *Eur J Nucl Med.* 1987;13:41-46. 6. Blake GM, Zivanovic MA, McEwan AJ, et al. Sr-89 therapy: strontium kinetics in disseminated carcinoma of the prostate. *Eur J Nucl Med.* 1986;12:447-454. 7. Lewington VJ, McEwan AJ, Ackery DM, et al. A prospective, randomised double-blind crossover study to examine the efficacy of strontium-89 in pain palliation in patients with advanced prostate cancer metastatic to bone. *Eur J Cancer.* 1991;27:954-958.

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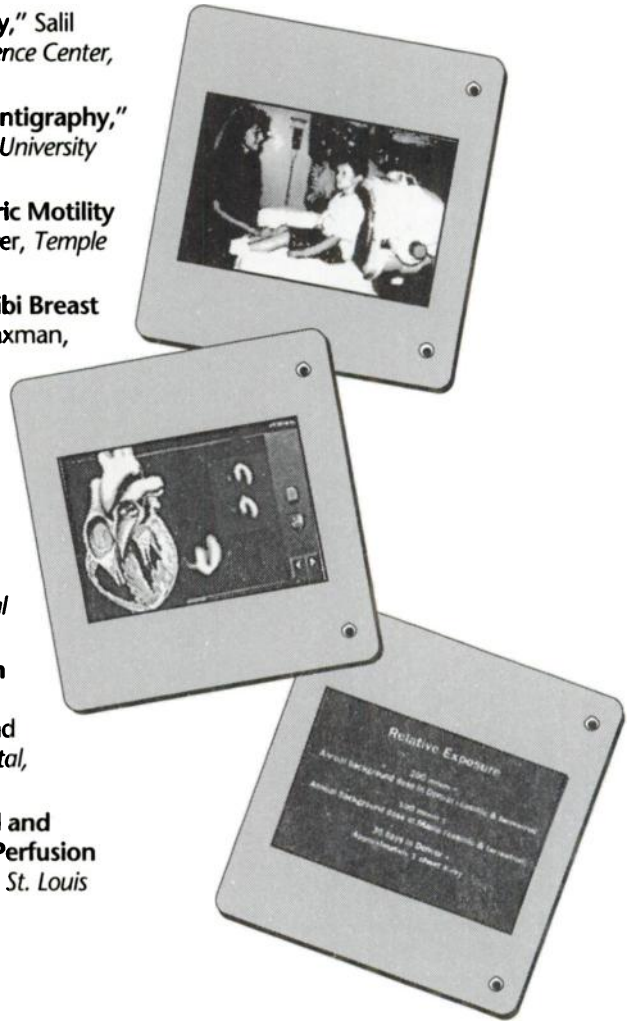

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The Radiopharmaceutical Science Council Announces: An inter-collaborative program presented by the Therapy Council and the Pacific Northwest Chapter at the Westin Hotel in Seattle, WA, Monday, February 7, 1994 entitled:

RADIONUCLIDE THERAPY OF PAINFUL BONE METASTASES: CURRENT STATUS AND FUTURE PROSPECTS

This one day program is designed to provide radiopharmaceutical/nuclear medicine scientists and nuclear medicine practitioners with a comprehensive review and a thorough understanding in the area of radionuclide therapy of intractable pain from osseous metastases in cancer patients. This program will introduce and build upon the basic science and mechanistic aspects of the use of unsealed internal beta emitter radionuclide sources. Among the topics to be discussed are:

- A detailed description of the nuclear, chemical and biological properties of the various radiopharmaceuticals currently available or being investigated for bone pain therapy.
- Technical aspects in using unsealed therapy sources.
- Various short- and long-term benefits, as well as the toxicity of unsealed source therapy vs. external beam therapy.
- Personal experiences in pain management, patient selection criteria, training, licensure requirements and social impacts.
- The latest clinical trial results for agents currently undergoing development.
- Advantages and shortcomings of various radionuclide therapy agents.
- Future improvements in therapy.
- Fifteen national and international faculty will be present to teach this course and share their latest data and experiences.

To register, fill out the form below (use photocopies for additional registrants) and mail or fax to:

The Society of Nuclear Medicine
Radiopharmaceutical Science Council Symposium
Department of Meetings Services
136 Madison Avenue
New York, NY 10016; Fax: (212)545-0221.

Remember: You must register before January 18, 1994, to be eligible for the discounted fee.

Fees: Fees include continental breakfast, box lunch and all coffee breaks.

	Before 1/18	On/After 1/18
Physicians/ Scientists		
Members	$85.00	$130.00
Nonmembers	$120.00	$170.00
Technologists		
Members	$55.00	$95.00
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SPECT BRAIN IMAGING CLINICAL FELLOWSHIP

Department of Radiology
Section of Nuclear Medicine

MEDICAL COLLEGE OF WISCONSIN

BENEFIT
This program is designed for nuclear medicine physicians, radiologists, technologists and referring physicians. It is intended to educate participants about the clinical utility of SPECT brain imaging with agents such as Ceretec® and Neurolite®.

Objectives include:
- Development of interpretation skills for brain images.
- Appreciation of clinical applications of SPECT brain imaging.
- Knowledge of image acquisition and reconstruction.
- Appreciation of factors that influence image quality.
- Knowledge of quality control techniques for SPECT.

SPONSORSHIP:
This program is sponsored by the Medical College of Wisconsin.

TUITION:
The tuition fee of $650 includes the course syllabus, handouts, breaks, breakfasts, lunches, and other amenities involved in making this a pleasant learning experience. Maximum enrollments have been established. Cancellations prior to the course will be refunded, less a $30 administrative fee.

CREDIT:
The Medical College of Wisconsin is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

Accordingly, the Medical College of Wisconsin designates this continuing medical education activity as meeting the criteria for 13.00 hours in Category I toward the Physician's Recognition Award of the American Medical Association.

Nuclear Medicine Technologists who attend the SPECT Brain imaging Clinical Fellowship are eligible for 1.0 VOICE credit.

Register me for the following dates: *(Please indicate a second choice)*

☐ January 24-25, 1994 ☐ September 12-13, 1994

☐ March 7-8, 1994 ☐ November 14-15, 1994

I will need reservations for _____Sunday and Monday night / _____ only on Monday night,
I will need a _____ single / _____double room.

A check in the amount of $650 should accompany this registration form and be made payable to the Medical College of Wisconsin. Telephone registrations must be confirmed by check within 10 days.

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Registrations and payment should be sent to:

LisaAnn Trembath
SPECT Brain Imaging Fellowship Coordinator
Nuclear Medicine Division
Medical College of Wisconsin
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Clinical Development Grants in NUCLEAR MEDICINE

ADAC Laboratories announces **the continuing support of development grants** to advance CLINICAL nuclear medicine. Several grants from $5,000 to $50,000 will be awarded. Funds can be used for equipment and personnel support for 12 month projects.

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The applications will be reviewed by an independent review committee of nuclear medicine professionals.

For application forms and information please write to

Advanced Clinical Research Program
ADAC LABORATORIES
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MILPITAS, CA 95035

Application Deadline: March 15, 1994

Funding Announcements: June 6, 1994
(Society of Nuclear medicine Meeting)

Funding Availability: July 1, 1994

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DU PONT PHARMA CARDIOVASCULAR NUCLEAR MEDICINE RESEARCH GRANTS

CALL FOR PROPOSALS

The Society of Nuclear Medicine Awards Committee announces that two grants for$25,000 each are available for July 1, 1994.

The objectives of these grants are to: (1) Encourage physicians to enter the field of Cardiovascular Nuclear Medicine, and (2) Support high quality nuclear cardiology clinical research.

Funds can be used to support the research and/or salary of the investigator. Preference will be given to young physicians, or those new to the field of Cardiovascular Nuclear Medicine. Awards will be announced at the Annual SNM Meeting, June, 1994.

Please send for more information and an application to:
The Society of Nuclear Medicine, SNM Awards Committee
136 Madison Avenue, New York, NY 10016

Deadline: January 7, 1994

Research and Development Fellowship

MALLINCKRODT FELLOWSHIP

Mallinckrodt, Inc. has announced an Annual Fellowship of $30,000 for a physician fellow active in nuclear medicine research and/or development. The award is to further a research or development project, and applicants are asked to submit their curriculum vitae, a detailed account of their research project including prior accomplishments on the project, and future plans. Deadline for this year's award is January 7, 1994. Requested information, along with at least two letters supporting the application, should be forwarded to: William J. MacIntyre, PhD, The Society of Nuclear Medicine, 136 Madison Ave., New York, NY 10016-6760. The recipient will be announced at the Annual Meeting of The Society of Nuclear Medicine.

THE SNM/MEDI-PHYSICS GRANT FOR INNOVATION IN THERAPY WITH UNSEALED SOURCES

Deadline: January 7, 1994

The Society of Nuclear Medicine announces the second in a series of research grants supported by Medi-Physics, Inc., Amersham Healthcare to further work in the use of unsealed sources in therapy applications.

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For more information and application forms, please contact:
The Society of Nuclear Medicine
SNM Awards Committee
136 Madison Avenue
New York, NY 10016

Completed applications must be returned by January 7, 1994. The award winner will be announced at the 1994 Annual SNM Meeting in Orlando, FL.

SNM
41ST ANNUAL MEETING
Critical Dates

Item		Due Date
ABSTRACT FORMS		
Scientific Papers	October Issue JNM	1/5/94
Scientific Exhibits	**CONTACT SNM DEPARTMENT OF MEETINGS**	1/5/94
REGISTRATION FORM		5/6/94
HOUSING FORM		5/13/94

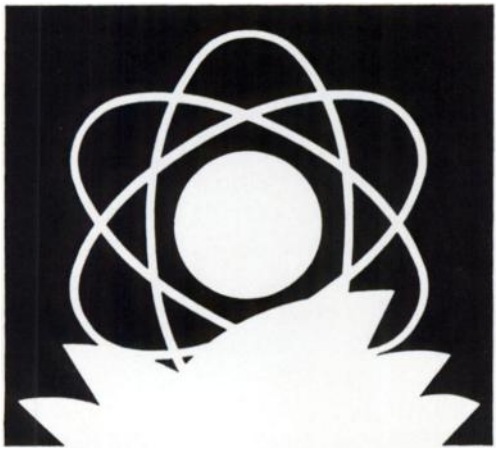
DON'T FORGET THE MID-WINTER MEETING IS IN SEATTLE, WASHINGTON

TITLE: Dedicated Instruments and Computer Processing Techniques for Cardiac and Brain Imaging

DATE: February 7-8, 1994

LOCATION: Westin Hotel, Seattle, WA

SPONSOR: The Computer and Instrumentation Council



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THE SOCIETY OF NUCLEAR MEDICINE

MID-WINTER MEETING

Title: Dedicated Instruments and Computer Processing Techniques for Cardiac and Brain Imaging

Location: Westin Hotel, Seattle, WA

Date: Monday-Tuesday, February 7-8, 1994

Sponsor: The Computer and Instrumentation Council of The Society of Nuclear Medicine

The Fee	Before 1/5	On/After 1/5
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All Pre-Registrations Must be Received by January 17, 1994

COMPUTER AND INSTRUMENTATION: DEDICATED INSTRUMENTS AND COMPUTER PROCESSING TECHNIQUES FOR CARDIAC AND BRAIN IMAGING

Westin Hotel, Seattle, WA • Monday, February 7–Tuesday, February 8, 1994

Please Enroll the Following (use copies for additional registrants):

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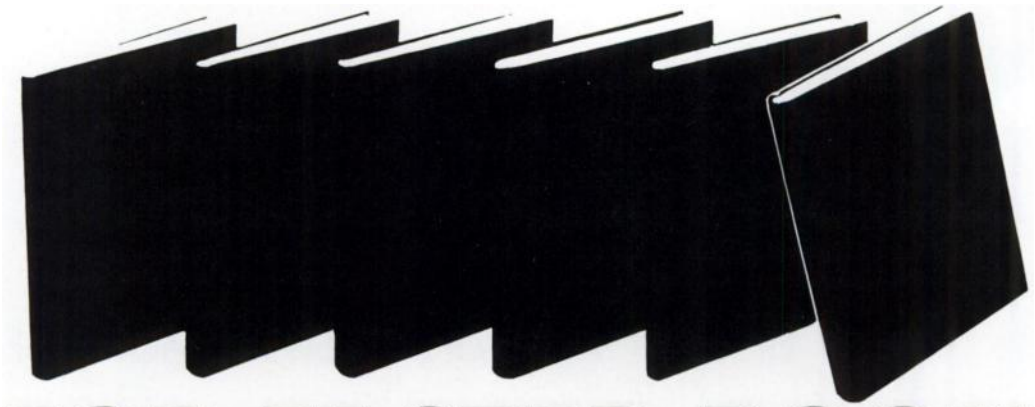

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The rule of thumb in stress perfusion imaging

In myocardial perfusion imaging, the quality of information is directly related to the level of exercise, as measured by the percentage of maximal predicted heart rate achieved by the patient at the time of tracer injection. This is because myocardial oxygen demand is mainly determined by the heart rate. When oxygen demand is increased by exercise, the disparity in coronary blood flow caused by the presence of significant CAD produces perfusion defects, which allow for lesion detection. This provides valuable physiological information for CAD diagnosis.[1,2]

A rule of thumb governs the exercise stress test. Patients are asked to exercise to 85% of their maximal predicted heart rate. This rule has been determined from a review of exercise ECG studies where diagnostic information has been considered inconclusive at heart rates below 85% of the maximal predicted heart rate.[3-5]

When to bend it

However, not all patients will achieve 85% of their maximal predicted heart rate. Some may reach diagnostic endpoints in testing. Others will have physical limitations or may be on beta blockers that prevent them from achieving the optimal level.

To maximize diagnostic certainty and avoid the risk of false-negative test results, suboptimal stress should be avoided.

Pharmacologic stress: The measure of success in imaging after suboptimal exercise

In images taken after patients have failed to reach 85% of their maximal predicted heart rate, defects may go undetected.[4,5] I.V. Persantine® (dipyridamole USP) can help salvage potentially nondiagnostic perfusion studies where patients have achieved suboptimal exercise levels. This form of pharmacologic stress, administered when the patient's heart rate has returned to baseline, allows for reliable results and may result in a higher yield of useful imaging information.[6]

In addition, I.V. Persantine offers a proven safety record,[7]* gradual onset, and a convenient, easy-to-follow protocol. In pharmacologic stress, it's the rule by which all other agents are measured. In perfusion imaging, anything less diminishes diagnostic certainty.

Ask questions about pharmacologic stress with I.V. Persantine. Call the Du Pont Pharma Nuclear Cardiology Infoline at 1-800-343-7851 for further information.

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*Serious adverse reactions associated with the administration of I.V. Persantine have included fatal and nonfatal myocardial infarction, ventricular fibrillation, symptomatic ventricular tachycardia, transient cerebral ischemia, and bronchospasm. Severe adverse events have occurred infrequently (0.3%) in a study of 3911 patients. Patients with a history of unstable angina may be at a greater risk for severe myocardial ischemia. Patients with a history of asthma may be at a greater risk for bronchospasm.

Please see brief summary of prescribing information on reverse for contraindications, warnings, and adverse reactions.

References: 1. Gould KL. Pharmacologic intervention as an alternative to exercise stress. *Semin Nucl Med.* 1987;17:121-130. 2. Verzijlbergen JF, Vermeersch PHMJ, Laarman GJ, Ascoop CAPL. Inadequate exercise leads to suboptimal imaging. Thallium-201 myocardial perfusion imaging after dipyridamole combined with low-level exercise unmasks ischemia in symptomatic patients with non-diagnostic thallium-201 scan who exercise submaximally. *J Nucl Med.* 1991;32:2071-2078. 3. Goldschlager N, Selzer A, Cohn K. Treadmill stress tests as indicators of presence and severity of coronary artery disease. *Ann Intern Med.* 1976;85:277-286. 4. Iskandrian AS, Heo J, Kong B, Lyons E. Effect of exercise level on the ability of thallium-201 tomographic imaging in detecting coronary artery disease: analysis of 461 patients. *J Am Coll Cardiol.* 1989;14:1477-1486. 5. Colby J, Haldi A-H, Iskandrian AS, Mattleman S. Hemodynamic, angiographic and scintigraphic correlates of positive exercise electrocardiograms: emphasis on strongly positive exercise electrocardiograms. *J Am Coll Cardiol.* 1983;2:21-29. 6. Young DZ, Guiney TE, McKusick KA, et al. Unmasking potential myocardial ischemia with dipyridamole thallium imaging in patients with normal submaximal exercise thallium tests. *Am J Noninvas Cardiol.* 1987;1:11-14. 7. Data on file, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

I.V. PERSANTINE®

(dipyridamole USP) Injection 5mg/ml

Brief Summary of Prescribing Information

CONTRAINDICATIONS Hypersensitivity to dipyridamole.

WARNINGS Serious adverse reactions associated with the administration of intravenous Persantine® (dipyridamole USP) have included fatal and non-fatal myocardial infarction, ventricular fibrillation, symptomatic ventricular tachycardia, transient cerebral ischemia, and bronchospasm.

In a study of 3911 patients given intravenous Persantine as an adjunct to thallium myocardial perfusion imaging, two types of serious adverse events were reported: 1) four cases of myocardial infarction (0.1%), two fatal (0.05%), and two non-fatal (0.05%), and 2) six cases of severe bronchospasm (0.2%). Although the incidence of these serious adverse events was small (0.3%, 10 of 3911), the potential clinical information to be gained through use of intravenous Persantine thallium imaging must be weighed against the risk to the patient. Patients with a history of unstable angina may be at a greater risk for severe myocardial ischemia. Patients with a history of asthma may be at a greater risk for bronchospasm during IV Persantine use.

When thallium myocardial perfusion imaging is performed with intravenous Persantine, parenteral aminophylline should be readily available for relieving adverse events such as bronchospasm or chest pain. Vital signs should be monitored during, and for 10-15 minutes following, the intravenous infusion of Persantine and an electrocardiographic tracing should be obtained using at least one chest lead. Should severe chest pain or bronchospasm occur, parenteral aminophylline may be administered by slow intravenous injection (50-100 mg over 30-60 seconds) in doses ranging from 50 to 250 mg. In the case of severe hypotension, the patient should be placed in a supine position with the head tilted down if necessary, before administration of parenteral aminophylline. If 250 mg of aminophylline does not relieve chest pain symptoms within a few minutes, sublingual nitroglycerin may be administered. If chest pain continues despite use of aminophylline and nitroglycerin, the possibility of myocardial infarction should be considered. If the clinical condition of a patient with an adverse event permits a one minute delay in the administration of parenteral aminophylline, thallium-201 may be injected and allowed to circulate for one minute before the injection of aminophylline. This will allow initial thallium perfusion imaging to be performed before reversal of the pharmacologic effects of Persantine on the coronary circulation.

PRECAUTIONS See WARNINGS.

Drug Interactions Oral maintenance theophylline may abolish the coronary vasodilatation induced by intravenous Persantine® (dipyridamole USP) administration. This could lead to a false negative thallium imaging result.

Carcinogenesis, Mutagenesis, Impairment of Fertility In studies in which dipyridamole was administered in the feed at doses of up to 75 mg/kg/day (9.4 times* the maximum recommended daily human oral dose) in mice (up to 128 weeks in males and up to 142 weeks in females) and rats (up to 111 weeks in males and females), there was no evidence of drug related carcinogenesis. Mutagenicity tests of dipyridamole with bacterial and mammalian cell systems were negative. There was no evidence of impaired fertility when dipyridamole was administered to male and female rats at oral doses up to 500 mg/kg/day (63 times* the maximum recommended daily human oral dose). A significant reduction in number of corpora lutea with consequent reduction in implantations and live fetuses was, however, observed at 1250 mg/kg/day.

*Calculation based on assumed body weight of 50 kg.

Pregnancy Category B Reproduction studies performed in mice and rats at daily oral doses of up to 125 mg/kg (15.6 times* the maximum recommended daily human oral dose) and in rabbits at daily oral doses of up to 20 mg/kg (2.5 times* the maximum recommended daily human oral dose) have revealed no evidence of impaired embryonic development due to dipyridamole. There are, however, no adequate and well controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human responses, this drug should be used during pregnancy only if clearly needed.

*Calculation based on assumed body weight of 50 kg.

Nursing Mothers Dipyridamole is excreted in human milk.

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

ADVERSE REACTIONS Adverse reaction information concerning intravenous Persantine® (dipyridamole USP) is derived from a study of 3911 patients in which intravenous Persantine was used as an adjunct to thallium myocardial perfusion imaging and from spontaneous reports of adverse reactions and the published literature.

Serious adverse events (fatal and non-fatal myocardial infarction, severe ventricular arrhythmias, and serious CNS abnormalities) are described previously (see WARNINGS).

In the study of 3911 patients, the most frequent adverse reactions were: chest pain/angina pectoris (19.7%), electrocardiographic changes (most commonly ST-T changes) (15.9%), headache (12.2%), and dizziness (11.8%).

Adverse reactions occurring in greater than 1% of the patients in the study are shown in the following table:

	Incidence (%) of Drug-Related Adverse Events
Chest Pain/Angina Pectoris	19.7
Headache	12.2
Dizziness	11.8
Electrocardiographic Abnormalities/ST-T changes	7.5
Electrocardiographic Abnormalities/Extrasystoles	5.2
Hypotension	4.6
Nausea	4.6
Flushing	3.4
Electrocardiographic Abnormalities/Tachycardia	3.2
Dyspnea	2.6
Pain Unspecified	2.6
Blood Pressure Lability	1.6
Hypertension	1.5
Paresthesia	1.3
Fatigue	1.2

Less common adverse reactions occurring in 1% or less of the patients within the study included:

Cardiovascular System: Electrocardiographic abnormalities unspecified (0.8%), arrhythmia unspecified (0.6%), palpitation (0.3%), ventricular tachycardia (0.2% see WARNINGS), bradycardia (0.2%), myocardial infarction (0.1% see WARNINGS), AV block (0.1%), syncope (0.1%), orthostatic hypotension (0.1%), atrial fibrillation (0.1%), supraventricular tachycardia (0.1%), ventricular arrhythmia unspecified (0.03% see WARNINGS), heart block unspecified (0.03%), cardiomyopathy (0.03%), edema (0.03%).

Central and Peripheral Nervous System: Hypothesia (0.5%), hypertonia (0.3%), nervousness/anxiety (0.2%), tremor (0.1%), abnormal coordination (0.03%), somnolence (0.03%), dysphonia (0.03%), migraine (0.03%), vertigo (0.03%).

Gastrointestinal System: Dyspepsia (1.0%), dry mouth (0.8%), abdominal pain (0.7%), flatulence (0.6%), vomiting (0.4%), eructation (0.1%), dysphagia (0.03%), tenesmus (0.03%), appetite increased (0.03%).

Respiratory System: Pharyngitis (0.3%), bronchospasm (0.2% see WARNINGS), hyperventilation (0.1%), rhinitis (0.1%), coughing (0.03%), pleural pain (0.03%).

Other: Myalgia (0.9%), back pain (0.6%), injection site reaction unspecified (0.4%), diaphoresis (0.4%), asthenia (0.3%), malaise (0.3%), arthralgia (0.3%), injection site pain (0.1%), rigor (0.1%), earache (0.1%), tinnitus (0.1%), vision abnormalities unspecified (0.1%), dysgeusia (0.1%), thirst (0.03%), depersonalization (0.03%), eye pain (0.03%), renal pain (0.03%), perineal pain (0.03%), breast pain (0.03%), intermittent claudication (0.03%), leg cramping (0.03%).

OVERDOSAGE No cases of overdosage in humans have been reported. It is unlikely that overdosage will occur because of the nature of use (i.e., single intravenous administration in controlled settings). See WARNINGS.

Caution Federal law prohibits dispensing without prescription.

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The Society of Nuclear Medicine

41st Annual Meeting

June 5 - June 8, 1994

Orlando, Florida

The 1994 Scientific Program Committee, Scientific Exhibits Subcommittee and the Scientific & Teaching Sessions Committee solicit the submission of abstracts from members and nonmembers of The Society of Nuclear Medicine for the 41st Annual Meeting in Orlando, Florida. Accepted Scientific Paper and Scientific Exhibit abstracts will be published in a special supplement to the May issue of the *Journal of Nuclear Medicine* and accepted Technologist Section abstracts will be published in the June issue of the *Journal of Nuclear Medicine Technology.* Original contributions on a variety of topics related to nuclear medicine will be considered, including:

- Instrumentation and Data Analysis
- Radioassay
- Radiopharmaceutical Chemistry
- Dosimetry/Radiobiology
- Nuclear Magnetic Resonance Chemistry
- Clinical Science Applications:
  - Bone/Joint
  - Cardiovascular (clinical, basic, and PET)
  - Endocrine
  - Gastroenterology
  - Neurosciences: Basic, Neurology and Psychiatry
  - Pediatrics
  - Pulmonary
  - Renal/Electrolyte/Hypertension
  - Hematology/Infectious Disease
  - Oncology Diagnosis (antibody)
  - Oncology Diagnosis (non-antibody)
  - Oncology/Therapy

Authors seeking publication for the full text of their papers are strongly encouraged to submit their work for immediate review to JNM, and for the technologist section, to JNMT.

There are two abstract forms for the annual meeting. The Scientific Paper abstract form can be obtained in the October 1993 JNM. The Scientific Exhibits abstract form is only available by calling or writing to:

The Society of Nuclear Medicine
Att: Abstracts
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DEADLINE FOR RECEIPT OF ABSTRACTS FOR SCIENTIFIC EXHIBITS IS WEDNESDAY, JANUARY 5, 1994.

1S

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(REQUIRED BY 39 U.S.C. 3685)

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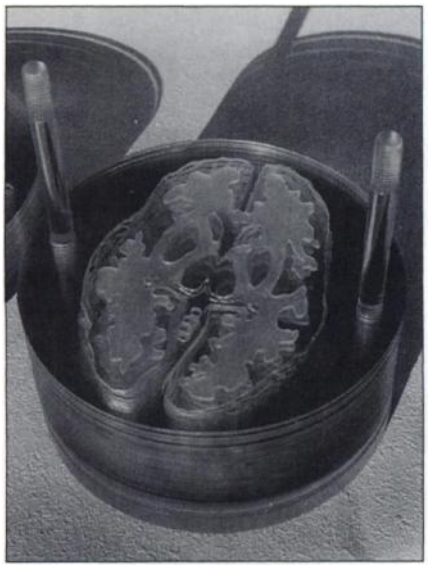
Each description of the products below was condensed from information supplied by the manufacturer. The reviews are published as a service to the professionals working in the field of nuclear medicine and their inclusion herein does not in any way imply an endorsement by the Editorial Board of The Journal of Nuclear Medicine *or by The Society of Nuclear Medicine.*

Brain Phantom



Nuclemed NV/SA is introducing a new anthropomorphic brain phantom, JB003, which is ready for PET and SPECT evaluation. The JB003 is a three-dimensional, high-resolution brain phantom that is able to simulate the most accurate image of CBF tracer uptake by a normal brain. The accuracy of this phantom means that there is both correct anatomical representation as well as a 4:1 ratio of isotope uptake for gray and white matter. The phantom is composed of 40 numbered round plates and the 4:1 ratio is true for each plate. The JB003 can be efficiently filled with a single radioactive solution despite its concentration due to a highly developed vacuum system which successfully eliminates residual bubbles. Normal plates can be substituted for special plates or hot or cold inserts to simulate various clinical conditions. **Nuclemed NV/SA, Weststraat 46 B/2, B-8800 Roeselare, Belgium. 32-51-221746. Fax: 32-51-222836.**

Radiation Monitoring System

Teledyne Isotopes has released the System 300, a thermoluscent dosimetry (TLD) system for personnel and environmental radiation monitoring. The System 300 incorporates a TLD reader, software, TLD cards, badge cases, an automatic irradiator and uses a highly sensitive phosphor that measures exposures less than 100 mrem. Other features of the System 300 include digitized glow curves recorded for analysis of each TLD card, automatic calibration, reader speed of 25 sec for each card, traceability through recording of 78 critical readout parameters for each TLD card and bar coding for accurate identification. **Teledyne Isotopes, TLD Department, 50 Van Buren Ave., Westwood, NJ 07675-1235. (201) 664-7070.**

Ultrasound Phantom

Gammex RMI has introduced the new RMI 403 Multi-Purpose Ultrasound Phantom which addresses the quality assurance needs of the latest high performance scanners and allows current RMI phantom users to upgrade without significantly changing their existing test protocol. Axial resolution targets are now 50% more challenging and are capable of measurements down to 0.25 mm. The new design features an extremely durable rounded case for easier handling with an innovative water dam that allows gel-free scanning when desired and conveniently flips out of the way when not in use. An integral cover shields the scanning surface and converts the phantom into its own air-tight storage case. **Gammex RMI, P.O. Box 620327, Middleton, WI 53562-0327. 1-800-GAMMEX 1.**

Safety Shield

Splash Shield has introduced a new safety face shield that protects a technician's face while allowing air to circulate. The Short Shield™ is shorter than full-face shields and features a patented hypoallergenic foam head band which contours to any size forehead for a secure fit. When worn in conjunction with a surgeon's mask, the Short Shield keeps blood or other potentially infectious matter away from the skin, eyes, mouth and nose to fully comply with OSHA regulations. **Splash Shield, 52 Dragon Court, Woburn, MA 01801. (617) 935-9060.**

Laboratory Floor Covering

Nomad, a new floor covering made specifically for medical, chemical and industrial laboratories has been introduced by Martinson-Nicholls, Inc. This new matting is a vinyl, nonwoven continuous filament bonded covering that withstands the abuse of most chemical spills, including sulfuric acid. Nomad is ideal for histology labs because it is scientifically engineered to trap paraffin-embedded cuttings and catches paraffin in its weaves helping to remove them from shoes. A special surfactant prevents wax from sticking to its surface. Nomad also has a unique cushion which relieves leg strain and stress associated with standing for long periods on concrete floors. It is extremely durable and wear-resistant and can be custom fit for any application. It is cleaned by simply shaking, vacuuming or rinsing with a hose and water. **Martinson-Nicholls, Inc., 7863 Enterprise Drive, Box 296, Mentor, OH 44061-0296. (216) 951-1312.**

Dropper Bottles

A new line of dropper bottles has been introduced by the Nalge Company to provide accurate, reliable and repeatable dispensing of aqueous reagents. The bottles are molded out of flexible, contact-clear, low-density polyethylene and have color-coded polycarbonate closures for easy sample identification. These bottles deliver 50-µl drops, feature a wide, 15-mm neck finish for easier filling and come in three convenient sizes: 4-ml, 8-ml and 15-ml. The one-handed flip-top dispensers eliminate cross-contamination and are nonpyrogenic, noncytotoxic and meet USP Class VI and FDA requirements for food contact. The dropper bottles can be sterilized by ionizing radiation or ethylene oxide and are available with white, yellow, orange, green, red or blue caps. **Nalge Company, P.O. Box 20365, Rochester, NY 14602. (716) 264-3985. Fax: (716) 586-8431.**

PPolicy—*The Journal of Nuclear Medicine* accepts classified advertisements from medical institutions, groups, suppliers, and qualified specialists in nuclear medicine. Acceptance is limited to Positions Open, Positions Wanted, and Equipment. We reserve the right to decline, withdraw, or modify advertisements.

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Terms—Payment must accompany order. Make checks payable, in U.S. dollars on U.S. banks only, to: The Society of Nuclear Medicine.

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Positions Available

Physician

CHIEF, NUCLEAR MEDICINE PHYSICIAN. Vacancy exists at the Philadelphia VA Medical Center. Service affiliated with Ivy-League academic department with residency program in nuclear medicine. ABNM certification with experience in all aspects of nuclear medicine including radioimmunoassay, in vitro and imaging including SPECT, with an interest in research. Send CV to: George E. McNeal, Jr. MD, Chief of Staff, Department of Veterans Affairs Medical Center, University & Woodland Avenue, Philadelphia, PA 19104.

NUCLEAR MEDICINE PHYSICIAN with Internal Medicine background wanted to join established practice at the Welborn Clinic an 85-doctor multi-specialty group. Fully equipped nuclear lab at hospital, which is directly across the street from the clinic. Family oriented community of 135,000 on Ohio River, two universities, and a variety of recreational and cultural amenities. Send CV to R. Denny Currier, Welborn Clinic, 421 Chestnut Street, Evansville, IN 47713.

Radiologist

Seven-member group of American trained B.C., radiologists in 450-bed tertiary care hospital, located in 125,000 populated city, 90 minutes from Pittsburgh, seeks a B.C., capable, motivated radiologist qualified in all phases of diagnostic radiology with special interest, ability, and fellowship training and board certification in nuclear medicine to be the Director of our Nuclear Medicine Division. We presently do approximately 5,500 nuclear scans/year, 1/3 of which are nuclear cardiology. Generous starting salary and benefit package with complete and equal partnership to follow. If interested, send CV to Jon Abrahams, MD, Chairman, Department of Radiology, Conemaugh Hospital, Johnstown, PA 15905 or call 814-536-7226.

Nuclear radiology position available in University Hospital for an academically oriented physician. Salary and title commensurate with experience and accomplishments. Opportunity for research, teaching, and clinical work. Certified in nuclear medicine or nuclear radiology required. Send résumé to Dr. Steven Pinsky, Professor and Head, Department of Radiology, University of Illinois Hospital, 1740 N. Taylor St., Chicago, IL 60612. University of Illinois is an affirmative action/Equal Opportunity Employer.

Residency

NUCLEAR MEDICINE RESIDENT: St. Luke's-Roosevelt Hospital Center, a 1315 bed voluntary university hospital of Columbia University College of Physicians and Surgeons, is offering a two-year Nuclear Medicine residency position beginning in July 1994 consisting of concurrent training in clinical imaging, physics, radiopharmacy, and radioimmunoassay. The program is designed to prepare trainees for examination and certification by the American Board of Nuclear Medicine. The Nuclear Medicine Service, a division of the Department of Radiology, is equipped with 16 state-of-the-art camera/computer systems, housed in laboratories for which new construction/renovation is nearly complete. A full spectrum of nuclear medicine and nuclear cardiology studies is performed. Research involves both clinical and basic sciences. Training programs include radiology and nuclear medicine residencies and a nuclear cardiology fellowship. A letter of inquiry should be sent to: Steven Parmett, M.D., St. Luke's Hospital Site Director, Division of Nuclear Medicine, St. Luke's-Roosevelt Hospital, 1111 Amsterdam Avenue, New York, NY 10025. St. Luke's-Roosevelt is an Equal Opportunity Employer.

NUCLEAR MEDICINE TRAINING PROGRAMS State University at Buffalo. The Department of Nuclear Medicine at SUNY/Buffalo offers the following residency training programs: 1) two-year nuclear medicine residency; 2) five-year track programs combining nuclear medicine with radiology or internal medicine or neurology or psychiatry leading to board eligibility in both specialties; and 3) one-year nuclear medicine programs for qualified radiologists. These programs offer a comprehensive exposure to all aspects of nuclear medicine including PET and allied imaging fields and research. Applications/information: Dr. Joseph Prezio, SUNY/Buffalo Nuclear Medicine, 105 Parker Hall, 3435 Main Street, Buffalo, NY 14214-3007. AA/EOE.

Senior Radiochemist

The Division of Nuclear Medicine at the Hospital of the University of Pennsylvania is seeking a senior radiochemist for its radiochemistry laboratory. The Division of Nuclear Medicine has strong research and clinical programs in both PET and SPECT. The successful candidate must have a background in radiochemistry research and in synthesizing both positron and single emitting compounds. Salary will be commensurate with experience of the qualified candidate. Please send curriculum vitae to Abass Alavi, M.D., Chief, Division of Nuclear Medicine, Department of Radiology, Hospital of the University of Pennsylvania, 3400 Spruce St., Philadelphia, PA 19104. The University of Pennsylvania Medical Center is an affirmative action/equal opportunity educational employer.

Technologist

NUCLEAR TECHNOLOGIST contingent needed from February—April for cardiology office in Detroit area. SPECT experience required. (313) 675-0220.

Positions Wanted

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ABNM Certified 1987, Cardiologist, with expertise in Cardiac SPECT, seeks Nuclear Cardiology/Nuclear Medicine position. Reply to Box 1201, The Society of Nuclear Medicine, 136 Madison Avenue, New York, NY 10016.

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ABR 1991/ABNM 1992; wishes to relocate to full-time position emphasizing cross-sectional imaging (esp. MRI-neuro/body) and nuclear medicine. All locations considered. Radiologist-Dr. JFM; 10101 Grosvenor Place #414; Rockville, Maryland 20852.

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Want to buy: used Elscint 409 SPECT or 409-M Mobile equipment and accessories. Call Allen Pock at (714) 562-5100.

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by Kai Lee, PhD

This comprehensive illustrated primer is **now in stock.** Hardware and software components of a nuclear medicine computer system are thoroughly discussed. A special section highlights SPECT and nuclear cardiology to demonstrate techniques for obtaining diagnostic information.

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CHIEF, NUCLEAR MEDICINE SERVICE

The Portland Veterans Affairs Medical Center (PVAMC) and its affiliate, the Oregon Health Sciences University (OHSU) invite applications for the position of Chief, Nuclear Medicine Service, PVAMC. PVAMC is a Dean's Committee Medical Center comprised of a modern 400 bed tertiary care hospital, a large outpatient program (218,000 visits per year) partially located at an outpatient clinic three miles from the hospital, and an extended care facility in nearby Vancouver, Washington with a 120 bed Nursing Home Care Unit, a homeless domiciliary, inpatient rehabilitation medicine ward and an alcohol/drug treatment center. A research center adjoining the main hospital has current annual funding of over 11 million dollars.

Ninety-eight funded principal investigators share 39,000 square feet of laboratory space including a fully equipped AAALAC approved animal research facility. An additional 28,000 square feet of space is allocated to research in the Vancouver Division and building adjacent to the medical center. The Nuclear Medicine Service consists of 17 FTE including 2 physicians, 1 nuclear pharmacist, 1 nuclear physicist, 9 technologists and is responsible for more than 36,000 nuclear medicine tests per year. Testing consists of RIA-ligand assay procedures, imaging procedures, and radionuclide therapy.

The house-staff program includes 3 nuclear medicine students. In addition, all VA/OHSU radiology residents rotate through the service. The Service Chief is the Program Director for a VA one-year certificate program for 6 nuclear medicine technologists. The Chief, Nuclear Medicine must be an MD, board certified in Nuclear Medicine and be qualified and acceptable to the University as an Associate Professor or full Professor. Additional certification in Internal Medicine or Radiology desirable. He/She must have demonstrated experience in academic medicine as a clinician, educator and researcher. It is equally important that the candidate have proven leadership and management capability. It will be the Service Chief's charge to be the clinical/academic executive who manages the human and fiscal resources of Nuclear Medicine Service to assure the highest quality tertiary clinical care, education, training and research program. PVAMC and OHSU are equal opportunity employers. Applicant may be subject to drug testing. Send curriculum vitae and three references to: John Kendall, MD, Chairman; Chief, Nuclear Medicine Search Committee, Portland VA Medical Center, P.O. Box 1034, Portland, OR 97207.

Memorial Medical Center
OF EAST TEXAS

NUCLEAR MEDICINE TECHNOLOGIST
Certified or Eligble

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DRUG ABUSE RESEARCH

The Intramural Research Program (Addiction Research Center) of the National Institute on Drug Abuse, NIH, has immediate openings for physicians (MD and OD). The clinical research program includes studies of the epidemiology, etiology, treatment and medical complications of drug abuse and of the mechanisms of action of drugs using techniques of clinical pharmacology, behavioral and cognitive sciences, genetics, electrophysiology, brain imaging (PET and MRI) and molecular biology. The development of new medications and innovative treatment approaches are high research priorities. Salary range is $39,000 to $73,472 with an annual $2,000 stipend increase. Applicants should have completed residency training or have 5 years of relevant clinical experience. Educational loan forgiveness of up to $20,000 yearly may be possible. The Addiction Research Center is located at the Johns Hopkins Bayview Research Campus in Baltimore. U.S. citizenship or permanent resident status is required. Submit Application for Federal Employment (SF-171), curriculum vitae and the names of three references to:

Personnel Mgmt. Spec.
NIH/NIDA/ARC
P.O. Box 5180
Baltimore, MD 21224

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Immediate opening for full-time, temporary (not to exceed one year). ABIM and ABNM eligible/certified preferred. Relocation expenses are authorized.

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Contact: Jerry Glowniak, MD, Acting Chief, Nuclear Medicine, VA Medical Center, PO Box 1034, Portland, OR 97207. Phone (503) 273-5023. EOE.

PROGRAM DIRECTOR
(INTERNAL DOSIMETRY)
(REFERENCE #273-93)

The Medical Sciences Division of the Oak Ridge Institute for Science and Education, operated by Oak Ridge Associated Universities through a management and operating contract with the U.S. Department of Energy, is seeking a Director for its Radiation Internal Dose Information Center. Duties will include program direction, supervision of technical staff, securing of program funding, performing related research, and lecturing and presenting papers at national and international meetings.

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To apply send résumé (include reference number, salary requirements and references) to:

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P.O. Box 117
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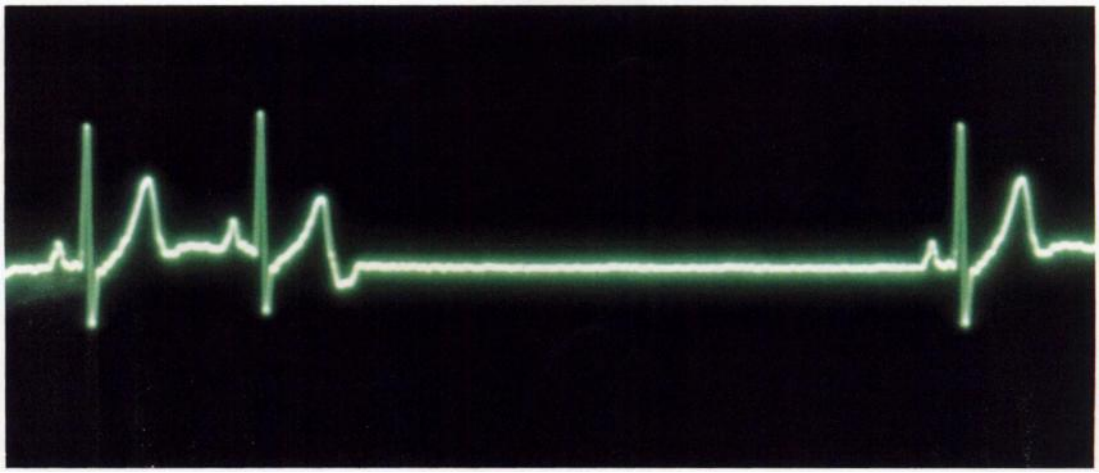

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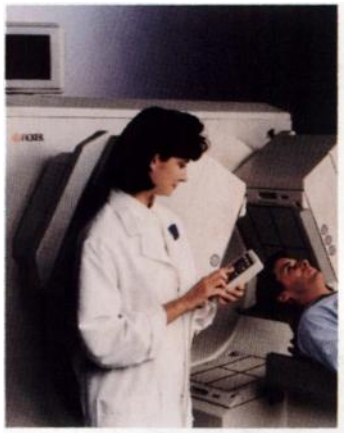

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IN A FOG??

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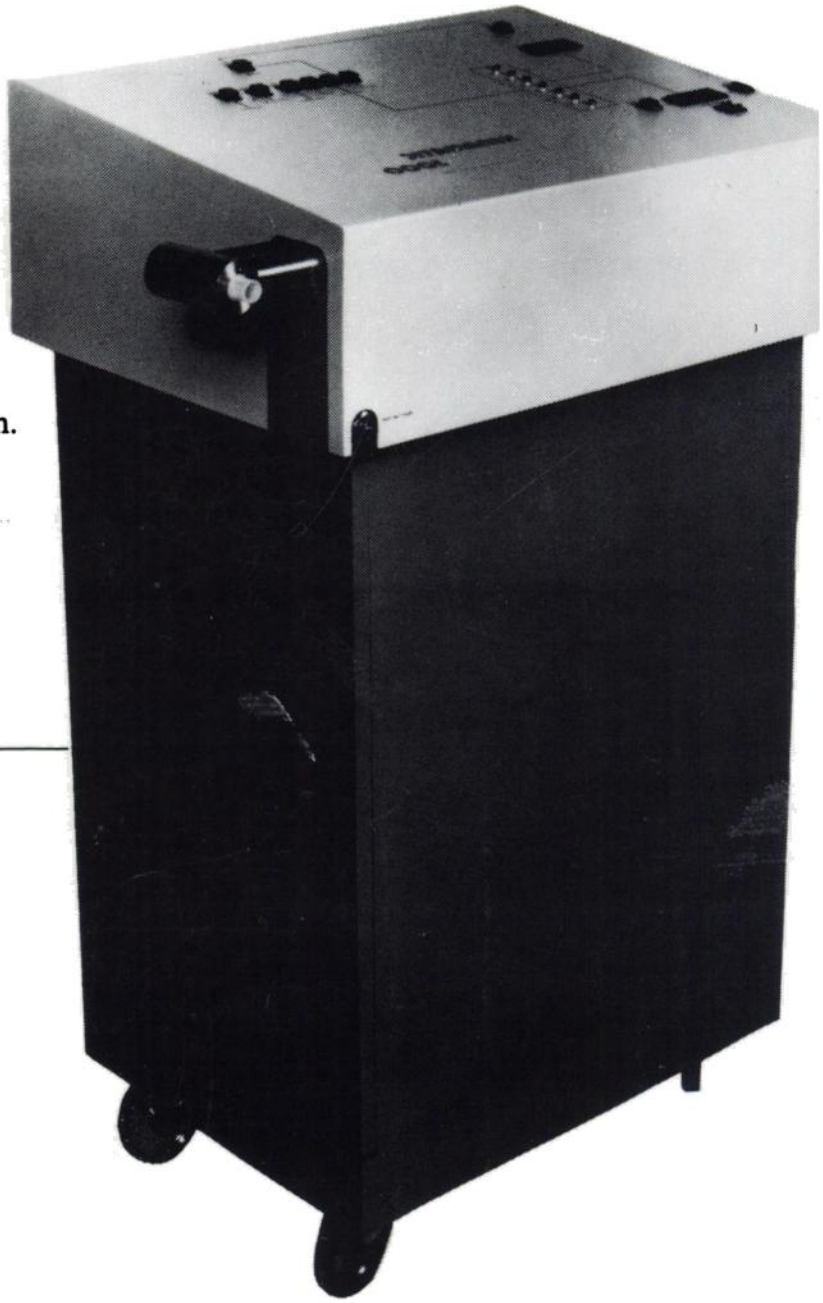

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