

DCD/DCB



DEPARTMENT OF RADIOLOGY

January 9, 1990

Radiologists:
Richard L. Taylor, M.D.
M. Van Ooyen, M.D.
Donald C. Parker, M.D.

Evelyn Matson
Nuclear Material Safety Branch
Nuclear Regulatory Commission
Region III
799 Roosevelt Rd.
Glen Ellyn, IL 60137

Lic. File
~~21-03194-04~~
03194

~~30-11510~~
21-03194-02/30-02027

Dear Ms. Matson:

Again I would like to apologize for not having been present at the NRC survey in September. As Radiation Safety Officer for many years and Chief of the Department of Radiology for fifteen or so, I have kept the radiation safety procedures to myself, rather than delegated or shared the responsibility, and felt this was most reasonable, as I was the only one doing radiation therapy or using therapeutic iodine and radium - and obviously was the one most knowledgeable in both their use and the radiation safety precautions necessary.

The reassignment of medical staff committees and responsibilities has just occurred, and the Radiation Safety Committee will not be any longer a committee of the medical staff, but a separate committee of the hospital, as you suggested. I still would like to invite medical staff members to participate in the function of the committee, particularly when we want to discuss any new nuclear medicine procedures that we may be getting into.

The hospital has contracted with an outside Radiology group to handle the radiation oncology and plan to develop a linear accelerator program in the next twelve months. This added radiation hazard will cause some more changes in responsibility for the Radiation Safety Officer and this group.

We have reread the applicable portions of Part 35 of the rules and regulations and believe we are in compliance with the present membership of the committee. Over the past 6-8 years, the nurse has been an administrative-nurse representative, and we have not appointed another, trying to use your expertise in both positions. We will continue to have her serve as a nurse representative - functioning in both capacities. We have an administrative representative added as well.

Meetings are scheduled annually by the administration on a master schedule, and monthly memos are to be provided to

IE07
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Ms. Evelyn Matson
Nuclear Regulatory Commission
January 9, 1990
Page 2

the membership reminding them of the quarterly meetings. The Radiation Safety Officer, particularly in the summer meetings in the past, reviewed the necessary reports, and if in his opinion there was not anything significant that needed to be discussed - cancelled several August meetings. He will not do this anymore.

There was a meeting agenda submitted with the letter of November 21, 1989, and we will try to attend to all points of the agenda at each meeting.

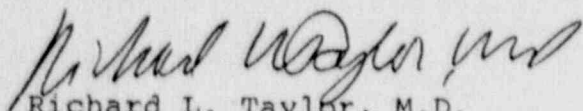
I agree the problem of audit does need addressing. The Radiation Safety Officer feels he does comply with the responsibilities, as described in 35.21 and does quarterly review of accidents, spills, and misadministrations, as required. As a matter of fact, should any of these occurrences happen, I am the first one that is notified. Because of that, we do not really review quarterly the procedures, as described in 35.21, but do on a daily basis. We also have not annually reviewed the radiation safety program in any formal way.

Included is a checklist for the Radiation Safety Officer to use for quarterly Radiation Safety Committee meetings, in order to prepare himself for the meetings and to be sure that the responsibilities are met. The checklist is, likewise, a good list to have so that others in the department in my absence could function as Radiation Safety Officers without any significant interruption in the program.

If you have any other suggestions, we would appreciate knowing.

Thank you.

Sincerely,



Richard L. Taylor, M.D.
Radiation Safety Officer

RLT/cml

Enclosure

Checklist for quarterly Radiation Safety Committee Meetings

| | 1st | 2nd | 3rd | 4th |
|--|-----|-----|-----|-----|
| Quarterly meeting | | | | |
| Annual Meeting & Audit | | | | |
| Dose calibrator (daily) Consistency | | | | |
| Dose calibrator (annual) accuracy | | | | |
| Dose calibrator (quarterly) linearity | | | | |
| Dose calibrator on installation geometric dependence | | | | |
| Survey meter | | | | |
| - annual calibration | | | | |
| - daily (record not required) | | | | |
| Radiopharmaceutical | | | | |
| - measurement of radiopharmaceutical | | | | |
| - record pharmaceutical, pt. name, dosage & activity, date, and time | | | | |
| Sealed Sources | | | | |
| - leak tests - every 6 mo. | | | | |
| Syringes - see Sycor proticol | | | | |
| Surveys for contamination | | | | |
| - daily - areas of use | | | | |
| - weekly - areas of storage | | | | |
| - waste disposal record (establish trigger level) | | | | |
| Film Badge reports - Radiology Surgery | | | | |
| Misadministrations | | | | |
| Accidents, significant spills | | | | |

Syncor Corp # 001
Pharmacy Service Center
2208 West Central Ave.
Toledo OH 43606
419/473-1215

PACKING LIST

SHIP TO: EMMA L. BIXBY MED. CTR.
818 RIVERSIDE AVENUE

CUST #: 2141
CASE #: 1
ROUTE #: 02

ADRIAN MI 49221

| DATE | PROD # | QTY. | UNIT DESCRIPTION | TIME | VOLUME | P.O. NUMBER | RX/ORD# | PATIENT NAME | AGE | RETN |
|----------|--------|-------|--------------------|-------|----------|-------------|---------|--------------|-----|------|
| 01/08/90 | TC0401 | 2.00 | mCi Tc99m mCi Srce | 08:00 | .04 ml | | 660879 | | | |
| 01/08/90 | TC9950 | 20.00 | mCi MDP TC99m | 10:00 | .72 ml | | 660970 | | | |
| 01/08/90 | TC9950 | 20.00 | mCi MDP TC99m | 11:00 | .81 ml | | 660971 | | | |
| 01/08/90 | I13113 | 3.00 | Cap I131Cap 15uCi | 12:00 | 3.00 Cap | | 660972 | | | |

ISOTOPIES TO BE ORDERED FROM SYNCOR, INC.
1944 W. Central
Toledo, OH
PH 419-473-1215

Time: _____

Ordered for (date) _____

Shipment Receipt
Instrument: _____ & _____

| Amount | Type | Time | Examination |
|------------|----------------|-------------------|-------------|
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |
| _____ mCi, | _____ at _____ | _____ for a _____ | |

- 1. MR/hr at surface _____
- 2. Removable contamination _____
- Packing slip & contents agree _____
- Contents of pkg. _____
- Trigger 1. _____ 2. _____

Time: _____

Other isotopes: _____

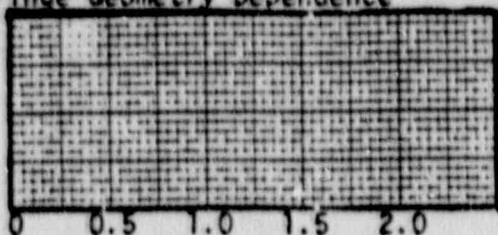
- Shipment Return
- 1. MR/hr at surface _____
- 2. Removable contamination _____

Trigger 1. _____ 2. _____

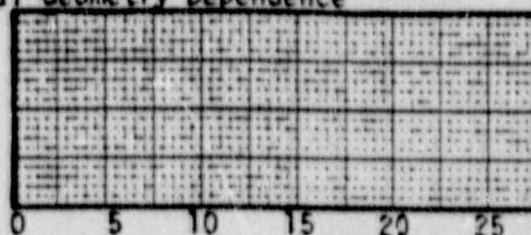
Dose Calibrator Geometry and Accuracy

Manufacturer: _____ Model: _____ SN: _____

Syringe Geometry Dependence



Vial Geometry Dependence



Date: _____ By: _____ RSO: _____

Accuracy Sources

19__

19__

| | | |
|--|---|---|
| _____ mCi of _____ Model: _____ SN: _____ Calibration date: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ |
| _____ mCi of _____ Model: _____ SN: _____ Calibration date: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ |
| _____ mCi of _____ Model: _____ SN: _____ Calibration date: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ | first assay: _____ mCi second assay: _____ mCi third assay: _____ mCi average: _____ mCi _____ mCi dev: _____ |

Name: _____

Date: _____

Quality Control

D T P A Kit Preparation

Date: _____ Technetium-99m Lot# _____
Rx # _____
D T P A-SN (CIS) Lot# _____
Rx # _____

Time prepared _____ Time tested _____ Time inj. _____
% free Tc99m _____
% hydrolyzed Tc99m _____
% bound Tc99m _____ Tech: _____

Quality Control

D T P A Kit Preparation

Date: _____ Technetium-99m Lot# _____
Rx # _____
D T P A-SN (CIS) Lot# _____
Rx # _____

Time prepared _____ Time tested _____ Time inj. _____
% free Tc99m _____
% hydrolyzed Tc99m _____
% bound Tc99m _____ Tech: _____

Quality Control

D T P A Kit Preparation

Date: _____ Technetium-99m Lot# _____
Rx # _____
D T P A-SN (CIS) Lot# _____
Rx # _____

Time prepared _____ Time tested _____ Time inj. _____
% free Tc99m _____
% hydrolyzed Tc99m _____
% bound Tc99m _____ Tech: _____

QUARTERLY INVENTORY OF SEALED SOURCES

| | JAN. | APR. | JULY | OCT. |
|---------------------------------|------|------|------|------|
| PHYSICAL CHECK | | | | |
| M/HR AT SURFACE OF STORAGE AREA | | | | |

PERFORM BY: ()

RSU -

| | JAN. | APR. | JULY | OCT. |
|---------------------------------|------|------|------|------|
| PHYSICAL CHECK | | | | |
| M/HR AT SURFACE OF STORAGE AREA | | | | |

PERFORM BY: ()

RSU

| | JAN. | APR. | JULY | OCT. |
|---------------------------------|------|------|------|------|
| PHYSICAL CHECK | | | | |
| M/HR AT SURFACE OF STORAGE AREA | | | | |

PERFORM BY: ()

RSU -

| | JAN. | APR. | JULY | OCT. |
|---------------------------------|------|------|------|------|
| PHYSICAL CHECK | | | | |
| M/HR AT SURFACE OF STORAGE AREA | | | | |

PERFORM BY: ()

| | JAN. | APR. | JULY | OCT. |
|---------------------------------|------|------|------|------|
| PHYSICAL CHECK | | | | |
| M/HR AT SURFACE OF STORAGE AREA | | | | |

PERFORM BY: ()

RSU -

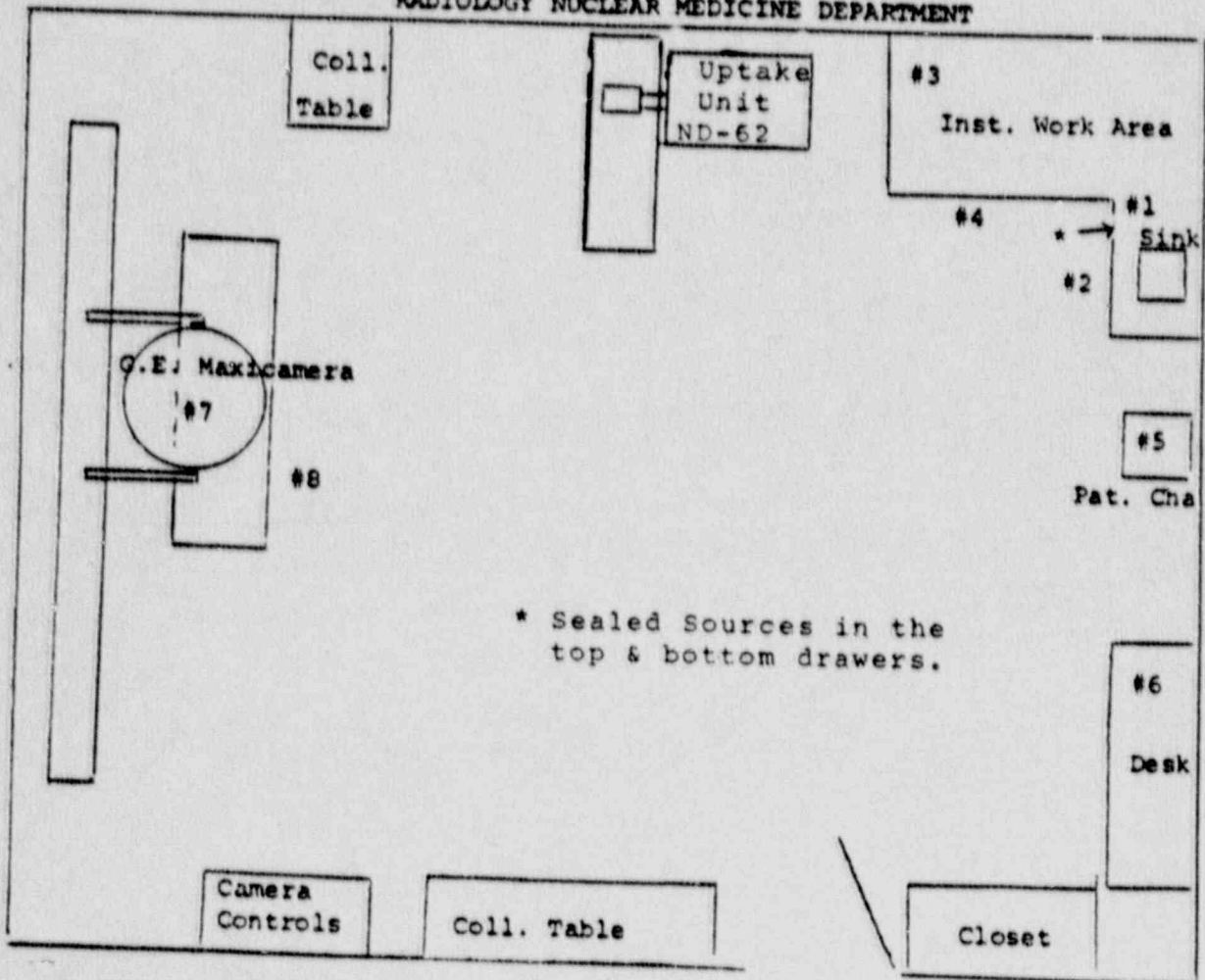
LIST OF SEALED SOURCES

| SOURCE | ACTIVITY | DATE OF CAL. | PHYS. FORM | SN-MODEL |
|--------|----------|--------------|------------|----------|
|--------|----------|--------------|------------|----------|

| | | | | |
|--------|--|--|--|--|
| Co-57 | | | | |
| Ba-133 | | | | |
| Cs-137 | | | | |

| | | | | |
|--------|--|--|--|--|
| Co-57 | | | | |
| Co-60 | | | | |
| Ba-133 | | | | |
| Cs-137 | | | | |

RADIOLOGY NUCLEAR MEDICINE DEPARTMENT



CS - 137

$T_{1/2}$ - 30.2 yrs.

A_0 - 201 uCi on 2-4-82

Windows:

Tc - 367 uCi 8-27-82
I-131 - 258 uCi 8-27-82

A_0 - original calibrated activity

FORMULA: $A_T = (A_0)(e)^{\left(\frac{0.693}{T_{1/2}}\right)t}$

*t - Jan, 1990 cs - 7.9 yrs. Tc & I-131 - 7.3 yrs.

Actual Readings - Jan., 1990

| | | | | | | |
|---------------|----|---------|----|-------|-------|-------|
| | cs | 169 | Tc | 311 | I-131 | 219 |
| Cal. Readings | | 167.889 | | 309.6 | | 217.6 |

Tolerance Level - +/- 5%

RADIOLOGY NUCLEAR MEDICINE DEPARTMENT
Bixby Medical Center - Adrian, MI 49221

X-14

11/89

Radiopharmaceuticals are supplied in unit doses by, Syncor, Inc., 2208 W. Central, Toledo, OH 43606, Phone (419)473-1215.

All unit doses must be recalibrated prior to patient injection & logged here. Recheck syringe after injection.

Unit Dose syringes & needles should be returned to Syncor, in the lead containers.

| | |
|-----------------------------------|-------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: Yes No | |
| Patient #: | Init. |

| |
|--|
| |
|--|

| | |
|-----------------------------------|-------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: Yes No | |
| Patient #: | Init. |

| |
|--|
| |
|--|

| | |
|-----------------------------------|-------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: Yes No | |
| Patient #: | Init. |

| |
|--|
| |
|--|

RADIOLOGY NUCLEAR MEDICINE DEPARTMENT
Bixby Medical Center - Adrian, MI 49221

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| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

| | |
|----------------------------|--------|
| Name: | Date: |
| Exam: | Dr.: |
| mCi Given: | Time: |
| Syringe & Needle Returned: | Yes No |
| Patient #: | Init. |

- A. All unit doses* are returned to Syncor
2208 W. Central Ave.
Toledo, OH 43606
(419) 473-1215
- B. All other radioactive waste is stored in a container under sink in a lead-lined cabinet. The waste is kept there until the container becomes full. It is then measured to make sure it cannot be distinguished from background, after which it is taken to the incinerator room and burned.
- C. A report will be made each time the waste is removed.

- NOTES:**
- a. Reports must be kept for three years
 - b. Measure surface and make sure it is same as BKG
 - c. Note date, radioisotope, survey instrument used, BKG dose rate, dose at surface of container, initials of person doing test.

WASTE DISPOSAL RECORD

| | | | | | | |
|------------------|--|--|--|--|--|--|
| DATE: | | | | | | |
| ISOTOPE: | | | | | | |
| SURVEY INST.: | | | | | | |
| BKG (mR/hr): | | | | | | |
| SURFACE: | | | | | | |
| INITIALS: | | | | | | |
| | | | | | | |
| | | | | | | |
| DATE: | | | | | | |
| ISOTOPE: | | | | | | |
| BKG (mR/hr): | | | | | | |
| SURFACE (mR/hr): | | | | | | |
| INITIALS: | | | | | | |