U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 30-02700/82-01(DETP)

Docket No. 30-02700

License No. 34-02176-01 Category G Priority IV

Licensee: St. Elizabeth Medical Center
601 Miami Boulevard, West
Dayton, OH 45408

Inspection At: St. Elizabeth Medical Center, Dayton, OH

Inspection Dates: September 30 and October 1, 1982

Inspectors: Evelyn R Matson
E. R. Matson 11/22/82

J. R. Mullauer 11/22/82

P. J. Whiston 11-22-82

Approved By: D. J. Sreniawski, Chief 11-22-82
Materials Radiation Protection
Section 2

Inspection Summary

Inspection on September 30 and October 1, 1982 (Report No. 030-02700/82-01(DETP))
Areas Inspected: Organization; licensed program; facilities and procedures review of the missing iridium-192 incident; personnel monitoring; training and instruction to workers; receipt and transfer; inventory; leak test; surveys; posting and labeling; and confirmatory measurements and dose assessment. The inspection involved 52 inspector-hours onsite and offsite by three inspectors. Results: Eight items of noncompliance were identified: (1) License Condition No. 20 - licensee failed to secure licensed material in a locked lead safe (Paragraph 6); (2) 10 CFR 20.402(a) and (b) - licensee failed to notify the NRC immediately and make a 30 day written report of the loss or theft of licensed material (Paragraph 6); (3) 10 CFR 35.14(b)(5)(vii) - licensee failed to make a source count and survey the patient before releasing the patient from the hospital - (Paragraph 12); (4) 10 CFR 35.14(b)(5)(v) - licensee failed to conduct quarterly physical inventories of all sealed sources received and possessed (Paragragh 10); (5) License Condition No. 20 - individuals handling sealed sources were not assigned ring badges and nurses attending implant patients were not assigned whole body film badges (Paragraph 7); (6) License Condition No. 20 - room surveys were not conducted at the conclusion of brachytherapy treatments (Paragraph 12); (7) License Condition No. 20 - nursing and

housekeeping personnel did not receive initial and annual training (Paragraph 8); (8) 10 CFR 71.5(a), 49 CFR 172.203(d)(v), and 49 CFR 173.393(n)(9) - licensee failed to enter transport index on shipping papers and failed to survey an outgoing package at three feet, at the surface, and for removable contamination (Paragraph 9).

DETAILS

1. Persons Contacted

Thomas A. Beckett, Chief Executive Officer
Joseph Belanich, Associate Director of Operations
R. Maxene Suerdieck, Radiology Department Supervisor
*Konrad F. Kircher, M.D., Director of Radiology
*Burton G. Must, M.D., Radiologist
Donald Marger, M.D., Therapeutic Radiologist
Daniel Navarro, M.S., Physicist
Robert Lykins, Radiology Technologist, R.T.
Steven D. McCammon, Nuclear Medicine Technologist, R.T.
Ron Jennings, Director of Housekeeping and Linen Services
Jennifer S. Shampton, R.N., Oncology Ward Nurse in Charge
Mickey Poore, R.N.
Janet Cunningham, R.N.
*Joan Thomas, Public Information Chief
Dena Michaelson, Public Information Assistant
Wila Ries, Radiology Secretary
Mark A. Mayer, Owner, Oxford Laundry, Oxford, OH
Richard F. Brinkman, M.D., Research and Control Specialist, Montgomery County Incinerator
David Young, Legal Council

*Denotes those present at exit meeting on October 1, 1982.

2. Purpose of Inspection

This special inspection was conducted on September 30 and October 1, 1982, in response to a telephone call from the licensee on September 27, 1982, reporting the loss of 48 iridium-192 brachytherapy sources. A search on and off the hospital premises was conducted. The facts surrounding the loss of the sources and the licensee's brachytherapy program were reviewed.

3. Organization

The Chief Executive Officer of St. Elizabeth Medical Center is Mr. Thomas A. Beckett; Mr. Joseph Belanich is the Associate Director for Medical Affairs; and Ruth Maxene Suerdieck is the Radiology Department Supervisor. The Director for Nursing Services is Rosalee Sierschula.

The medical staff includes Konrad Kircher, M.D., Director, Department of Radiology; Donald Marger, M.D., Therapeutic Radiologist; and Tomas Garnica, M.D., Chairman, Department of Nuclear Medicine.

When questioned who the Radiation Safety Officer was, the licensee's representatives responded that Dr. Garnica had some responsibilities as RSO as did Mr. Daniel Navarro. In addition, License Condition No. 20 references the application dated March 31, 1978, which shows Dr. Garnica as RSO; however the referenced letter dated January 28, 1980, shows Dr. W. R. Roberts, as RSO, and in another section lists Dr. D. Marger

as RSO. A licensee representative stated that no one wanted to assume all of the responsibilities of the position. Therefore, there was no one specific person acting in that capacity. A review of the referenced applications and letters show that there is no definition of the duties or responsibilities of a person or persons acting in the Radiation Safety Officer capacity. The NRC inspectors expressed concern regarding the lack of specific duties and clear line of responsibility in this area.

No violation was identified

4. Licensed Program and Inspection History

On March 18, 1957, St. Elizabeth Medical Center was first issued License No. 34-02176-01 for possession of byproduct material for use in nuclear medicine. It was last amended in its entirety on September 18, 1979. The current license authorizes the use of byproduct material listed in Groups I-VI, in vitro testing, and ventilation studies using xenon-133 as free gas or solution. Licensed activities were inspected in 1957 (no items of noncompliance); 1965 (no items of noncompliance); 1974 (4 items of noncompliance; failure to evaluate extremity exposure of individuals eluting generators; unauthorized use of byproduct material; failure to post Parts 19, 20, and Form NRC-3; and failure to maintain records of area surveys and disposal surveys); 1978 (no items of noncompliance) and 1981 (1 item of noncompliance; failure to perform bioassays on individuals administering liquid iodine-131 to patients).

Group VI authorization was given to the licensee in Amendment No. 29 issued on July 10, 1980; however the brachytherapy program did not become active until May 1981, and was limited to the use of iodine-125 and iridium-192. The program expanded when: a full-time physicist was hired in January 1982; 45 millicuries of cesium-137 were received in February 1982; and a new radiation therapy department was opened in April 1982. The 1982 program has included three implants of iodine-125, two of iridium-192, and four of cesium-137.

No violation was identified.

5. Facilities and Procedures

All sealed sources used for branchytherapy are stored in the new Radiation Therapy Department in a room designed for a linear accelerator or cobalt-60 teletherapy unit. This room is currently empty and is referred to as the future treatment storage room. It is used only for sealed source storage. Equipment is available and includes remote handling tools; lead glass shield, lead bricks; gloves; cesium-137 storage safe; an assortment of lead containers; a Heyman carrier; and a three wheeled cart for transporting sources in the hospital.

The only container that can be locked is the cesium-137 safe. The lead containers used for storing other sources such as iridium-192 or iodine-125 are placed on the table top behind the lead bricks and are not lockable. The cart and Heyman carrier remain on the floor. Attachment A has photographs of these items.

The therapeutic radiologist (therapist) and the physicist are the two primary individuals involved with the bachytherapy program. The following sequential account of their routine practices and duties is based on statements made by the therapist. The practices and duties are general and are not established in any written procedures nor are they rigidly followed as seen in the case involving the lost iridium-192 seeds.

When the therapist wants to treat a patient he provides the physicist with specifics for the type of treatment and estimated dose desired. The physicist determines the number and configuration of the sources needed and orders them if necessary. When the sources arrive they are stored in the shipping container in the storage room. For many of the implants, the therapist verbally notifies the physicist to transport the sources and special instruments from the storage location to the operating room or patient's room for implanting. The physicist performs any necessary surveying before, during and after implanting. He is also responsible for preparing the final dose calculation and treatment time. These are based on radiographs sent to him showing the source locations in the patient and the therapist's prescribed dose.

Source removals are performed in the patient's room by the therapist. He removes the sources, immediately puts them in a lead container and personally transports them back to the future treatment storage room. He leaves them in the transport container for the physicist to put away that day or the next working day. The physicist is not normally present at explants and there appears to be no specific procedure for informing him that an explant has occurred or that one is planned.

Surveys during implant and treatment as well as after treatment are the physicist's responsibility. He is also the one who returns the sources from the transporting container to their proper storage locations.

No violation was identified.

6. Review of the Missing Iridium-192 Incident

Forty-eight iridium-192 brachytherapy seeds totaling 57 millicuries were lost after being removed from a patient and transported to the Radiation Therapy Department on June 5, 1982. The physicist discovered the loss sometime between July 9 and 15, 1982, when preparing to ship them back to the manufacturer.

The licensee reported the loss to the NRC Regional Office by telephone on September 27, 1982, approximately nine weeks after it was discovered and submitted a written report on October 8, 1982. This failure to report the loss immediately and submit a written report in 30 days is in noncompliance with 10 CFR 20.402(a) and (b) which requires immediate notification by telephone and a 30 day written report to the appropriate NRC office for any loss or theft of licensed material in such quantities that a substantial hazard may result to persons in unrestricted areas. (See Paragraph 14).

The 48 iridium-192 seeds reported missing were from a shipment of 64 seeds (76 millicuries) from Alpha-Omega Services, Inc., received at St. Elizabeth Medical Center on May 25, 1982. Each seed is made of metallic platinum - iridium-192 wire encapsulated in a platinum sheath and is 3mm long and 0.5mm in diameter. In this case, eight seeds were encased touching end to end in a nylon tube called a ribbon. Each ribbon was approximately 10 inches long and there were eight ribbons of eight seeds per ribbon in the shipment. On receipt, the physicist counted the number of ribbons in the shipment and recorded the number of seeds and the activities in a receipt log book. The ribbons remained in the lead shipping container which was kept in the future treatment storage room in the Radiation Therapy Department.

When the sources were needed for the implant on June 2, 1982, the therapeutic radiologist and the therapy department nurse took all of the seeds to surgery in the shipping container. In surgery, six ribbons were cut to the desired lengths of approximately 2.5 inches each. Because the ribbons were specially ordered to have the seeds touching end to end, the therapeutic radiologist did not need to cut off individual seeds. Eight seeds remained in each 2.5 inch ribbon. Six ribbons were implanted in the lower left mandible of the patient to treat recurring carcinoma of the floor of the mouth. Two unused ribbons (16 seeds) remained in the shipping container and were returned to the future treatment storage room. Radiographs showed six ribbons in the patient; however the number of seeds could not be counted because they were so closely spaced end to end that individual seeds could not be distinguished. After surgery the patient was taken to private room number 8520, SW8, which is on the oncology ward. This is an end room adjacent to one other patient room. (See Paragraph 12).

On Saturday, June 5, 1982, the radiologist, attended by a nurse, removed six ribbons from the patient in the patient's room. The radiologist said he cannot remember exactly what happened, but he is sure he followed his routine practice. He put the seeds either in a square lead lined metal box or a Heyman carrier and transported them on a three wheeled cart to the future treatment room storage area. See Attachment A for pictures. He left the seeds in the unlocked carrier on the cart. He said the treatment room was unlocked at that time and was not locked until September 29, 1982. In addition, the Radiation Therapy Department held an open house on Sunday, June 6, 1982. Approximately 200 hospital employees and members of the public had access to the future treatment room storing the iridium-192 seeds and other brachytherapy sources. While there were guided tours, positive control was not exercised to assure that no one had access to these sources.

The licensee did not store the 16 unused seeds in a locked lead safe, and was in possession of at least two other shipments of iridium-192, one in October 1981, and another in August 1982, which were not secured as required.

These instances constitute noncompliance with License Condition No. 20 which references the letter dated January 28, 1980. This letter states sources will be stored in a lead safe (key locked) in the therapy room.

The therapist and physicist stated that they had not communicated on either the implant or explant times. The physicist was not aware of the implant until he received the patient's radiograph. He was made aware of the explant by a form he received from the oncology ward on Monday, June 7, 1982, indicating that the patient had been released on Saturday, June 5, 1982. He surveyed the room on Monday and the results were negative. See Paragraph 12 for details on surveys. He stated that on Monday he saw the yellow iridium-192 shipping container in the storage area and assumed the explanted seeds were in it. He did not actually look for the seeds until they were due to be returned to Alpha-Omega between July 9 and 15, 1982. It was at this time that he discovered they were missing; however he did not mention the loss until early September 1982, when he asked the therapist where they were. Several individuals became involved in the search at this point. When the seeds could not be found, the Associate Director of Operations was informed on September 24, 1982. On September 27, 1982, the Chief Executive Officer was notified as was NRC Region III. For a summary of these events refer to Attachment B.

The licensee began an extensive search and survey program on Monday, September 27, 1982, to locate the sources. The entire hospital complex was surveyed including rooms on all floors in all buildings. All incoming, outgoing, and stored linens were surveyed as was the commercial laundry facility in Oxford, Ohio, and their transport trucks. The patient was surveyed on September 29, 1982. All results were negative. For more details on licensee's surveys see Attachment C.

The licensee issued a general notice on September 29, 1982, to all employees informing them of the lost sources and providing a description. A press release was issued on September 30, 1982, to local newspapers, T.V. and radio stations. There was a response by the press. See Attachment D for the notice to the employees and Attachment E for a newspaper story about the loss.

Two violations were identified.

7. Personnel monitoring

Evaluations of whole body exposures for radiologists, therapeutic radiologist, physicist, and technologists are routinely performed using film badges supplied monthly by Siemens. However, interviews with employees and a review of film badge records from January 1980 through August 1982 show that the therapeutic radiologist, physicist, and a technologist who handled Group VI sources were not assigned TLD ring badges. Interviews also revealed that nurses caring for brachytherapy implant patients are not assigned whole body film badges or TLD ring badges. Failure to badge these people is in noncompliance with License Condition No. 20 which references letters dated June 6, 1980, and January 28, 1980. These letters state that the personnel handling sealed sources be given ring badges and that nurses attending brachytherapy patients be issued whole

body badges and if they provide external care to the patients ring badges will be used.

One violation was identified.

8. Training and Instructions to Workers

The licensee has established procedures requiring that employees receive instructions before they assume their duties with or in the vicinity of radioactive material and during an annual refresher course. An interview with a housekeeping supervisor revealed that not all housekeeping personnel who routinely enter and clean rooms during brachytherapy treatments have received the initial and annual instructions. In addition, an interview with a supervising nurse on the oncology ward indicated that all nurses who attend brachytherapy patients, including herself, had not received instructions in their duties or radiation safety neither initially nor annually. She stated that the nurses must ask a physician what procedures to follow and were apprehensive about dealing with brachytherapy patients. This lack of training constitutes noncompliance with License Condition No. 20 which references the letter dated March 31, 1978. This letter states that all new employees, before assuming their duties and annually thereafter will receive proper instruction regarding radiation safety procedures pertaining to their contact and duties with patients who have received radioactive material.

One violation was identified.

9. Receipt and Transfer

The licensee's receipt procedures and records were not reviewed by the inspectors.

Transfers made by the licensee consist of returning used iridium-192 seeds to the supplier Alpha-Omega Services, Inc. The seeds are repacked in the original lead shipping container (see Attachment A, page 2) inside the original cardboard box used by Alpha-Omega. Alpha-Omega sends additional Radioactive Yellow-III labels and partially completed shipping papers to aid their customers in returning sources. The licensee applied the new Radioactive Yellow-III labels and shipped 198 millicuries of iridium-192 on September 14, 1982. A review of the records showed that on this shipment, the shipping papers did not include a transport index as required by 49 CFR 173.203(d)(v). In addition, statements made by a licensee representative revealed that surveys were not made at three feet and at the surface of the package nor was a contamination wipe test performed as required by 49 CFR 173.393(n)(9); 49 CFR 173.397; and 49 CFR 173.393(i).

One violation was identified.

10. Inventory

This license authorizes the possession of one curie total of Group VI sealed sources. The licensee currently has on hand 450 millicuries of

cesium-137, a 40 millicurie strontium-90 eye applicator, less than 460 millicuries of iodine-125, and iridium-192. This is within the possession limit.

The licensee maintains a bulletin board with pins to mark cesium-137 source locations. See Attachment A, page 2. Each time the used cesium-137 sources are returned they are inventoried and the pins are moved to indicate that they have been returned; however unused sources are not inventoried nor are all sources inventoried quarterly. In addition, a strontium-90 eye applicator, and 16 iridium-192 seeds possessed since May 1982, have not been inventoried. This is in violation of 10 CFR 35.14(b)(5)(v) which requires any licensee who possesses Group VI sources or devices to conduct a quarterly physical inventory.

One violation was identified.

11. Leak Tests

A review of leak test records indicate that sealed sources have been leak tested by James Keriakes every six months. J. Keriakes is a consultant to the licensee and is authorized to perform this service. Leak test certificates show that all results were less than .005 microcuries of removable contamination.

No violation was identified.

12. Surveys

The hospital's survey program includes radiation measurements of all patients' rooms and adjacent areas during a brachytherapy treatment. Records of surveys are maintained and when readings in excess of 2 mR/hr are encountered in an unrestricted area actions are taken to reduce the level or remove the patient. Calculations are made to determine the length of time a person may spend near a patient.

A referenced letter dated January 28, 1980, specifies that at the conclusion of brachytherapy treatments a survey will be performed to ensure that all sources have been removed and that no sources remain in the patient's room. Forty-eight iridium-192 seeds were removed from a patient at 9:00 a.m. on June 5, 1982. This patient was released from the hospital on June 6, 1982, at 2:10 p.m. Records show a survey of the room was performed by the physicist on June 7, 1982, two days after the conclusion of the treatment. In addition, a licensee representative stated that at the conclusion of at least three treatments using cesium-137, the patients' rooms were not surveyed. Records showed these treatments occurred on March 11, 1982; April 19, 1982; and May 6, 1982. This is in violation of License Condition No. 20 which references the letter dated January 28, 1982. This letter states that rooms will be surveyed at the conclusion of treatments.

As stated above, the patient treated with 48 iridium-192 seeds was released from the hospital at 2:10 p.m. on June 6, 1982. Contrary to 10 CFR 35.14(b)(5)(vii), which requires the patient to remain hospitalized until a source count and a radiation survey of the patient confirm

all sources have been removed, the patient was released and a source count and a radiation survey had not been conducted. The patient was not surveyed until September 29, 1982.

Two violations were identified.

13. Posting and Labeling

Posting of radioactive caution and warning signs in the Group VI storage area appeared to be adequate. Transport devices and storage containers all had radiation caution and warning signs affixed and appeared to be adequate. No patients were being treated on the day of this inspection with brachytherapy sources. However, nurses working in the oncology ward stated that radiation caution and warning signs are posted in areas where patients are cared for.

No violation was identified.

14. Confirmatory Measurements and Dose Assessment

The gamma constant for iridium-192 is 4.8 R/hr/curie at a distance of one meter. Assuming all 48 seeds (57 millicuries on May 27, 1982) of iridium-192 remained together as a point source, the exposure rate would be approximately 27.4 mR/hr at one meter, 294.8 mR/hr at one foot, and 273.8 R/hr at one centimeter. The inspectors performed direct radiation surveys of all areas where the missing seeds might be located including: hallways in the oncology ward, patient's room, bathroom, sink and sink trap; future treatment storage room, sink, and sink trap; all lead containers; radioisotope waste storage area; shipping area; surgery room, hallways, sink, and sink trap; Oxford Laundry, Oxford, Ohio; laundry trucks; and Montgomery County Waste Incinerator and dump site. Results of all areas surveyed were negative. The instruments used were a Ludlum Model 19 Micro R meter, calibrated August 18, 1982; a Victoreen Thyac II, Model 489, NRC serial No. 000706, calibrated July 13, 1982, with a NaI scintillation probe; and an Eberline Model E-520, NRC serial No. 009570, calibrated on September 13, 1982.

15. Exit Meeting

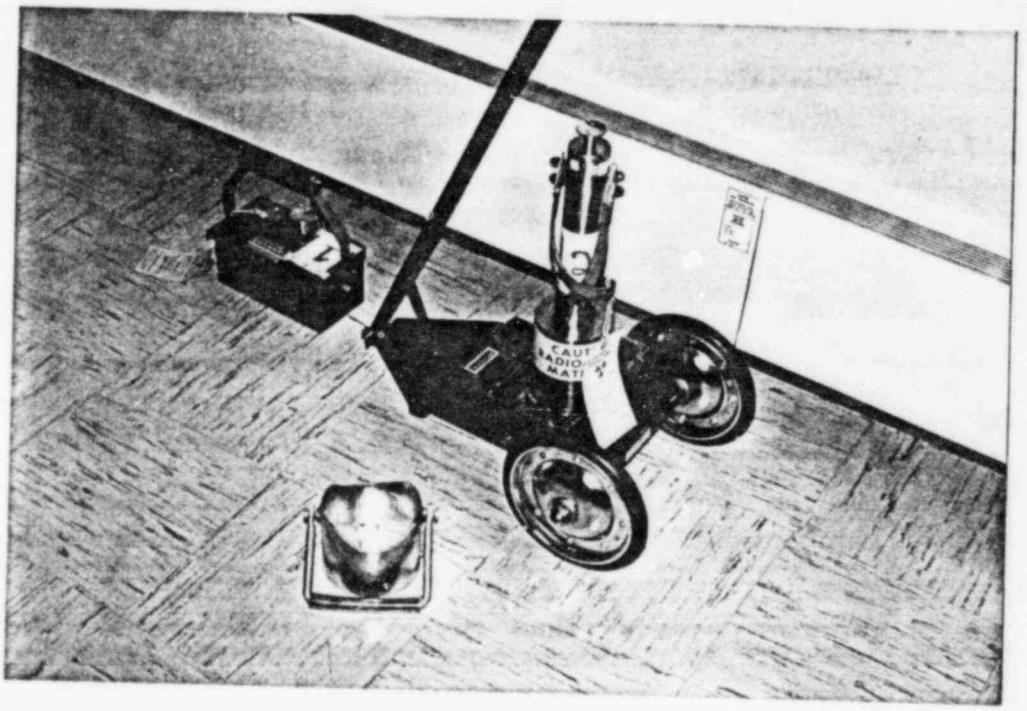
On October 1, 1982, an exit meeting was held at the conclusion of the inspection with the licensee representatives identified in Section 1. The apparent items of noncompliance and the possibility of escalated enforcement were reviewed and discussed.

16. Enforcement Conference

An enforcement conference was held in the Region III office on October 14, 1982. The meeting was attended by Mr. T. Beckett, Mr. J. Belanich, Ms. R. Suerdieck, and Mr. D. Young of St. Elizabeth Medical Center and Mr. A. B. Davis and members of the Region III staff. During the meeting the NRC enforcement policy and the eight items of noncompliance were discussed. Also discussed were the corrective actions taken as a result of the loss of the iridium-192 sources.

Attachment A

1. Heyman carrier, Lead Lined Box, and Three Wheeled Cart



2. Storage Area, Inventory Bulletin Board

3. Iridium-192 Shipping Container

Attachment A
page 2 of 2.

Wednesday September 29, 1982

SUBJECT: STATEMENT OF EVENTS CONCERNING LOSS OF 6 RIBBONS OF IRIDIUM 192

June 2,1982
Patient received an iridium 192 implant of the tongue in the Surgery Department, St. Elizabeth Medical Center.

June 5,1982 9 AM
Implant removed. Nurse notation on patient chart 6 ribbons removed. Agreement with nurse and Dr. Marger, implant was placed in receptacle for radioactive material. Dr. Marger returned to the Department of Radiation Therapy.

Between July 9 to July 15, 1982
Mr. Navarro in getting ready to return iridium 192 to supplier was unable to find source in radioactive container. Begun an immediate search on his own.

September, 1982
Mr. Navarro notified Dr. Marger of the lost source. Dr. Marger was unable to identify which radioactive container it was returned to and together they started retracing steps.

September 7, 1982
I was notified of the lost source. I immediately started gathering information.

September 21, 1982
Upon receiving a memo from Dr. Marger I consulted with the Acting Director of Radiology, Dr. Burton G. Must, Jr.

September 23, 1982
Dr. Must and I sat down with Dr. Marger to concentrate efforts on identifying how we could have possibly lost this material.

September 24, 1982
I talked with nurse Cunningham who assisted Dr. Marger in the removal of the implant and she stated Dr. Marger removed the implant and placed in a receptacle.

Notified and consulted Mr. Joseph Belanich, Associate Director of Operations on this matter. Set up top management meeting for September 27, 1982 to investigate this matter.

September 25, 1982
On this day, I notified the Director of Radiology, Dr. Konrad F. Kircher who strongly encouraged us to begin a search of the entire facility.

September 25, 1982
Mr. Navarro and I surveyed the shipping pig, less the unused seeds to be sure that the dual cavity container had no activity.

September 26, 1982
At 1 AM, Mr. Lykins and I began a search of this facility. Prior to this time Nursing Unit SW8 had been surveyed, all possible areas such as Radiation Therapy, patient room again, Radiology Department, Cobalt Therapy, and the first linen survey.

September 27, 1982
An official notification to Administration was made of the loss of 48 seeds of iridium 192. A meeting of top management, Radiologists, Physicist, Radiotherapist, Mr. Robert Lykins and Mrs. Maxene Suerdieck was held to discuss this matter. Administration notified N.R.C. immediately following meeting.

September 28, 1982
At 3 PM continual linen survey. At 5 PM, surveyed incoming linen. AT 8 PM, continued building search in Non-Medical areas. SW Basement.

September 29, 1982
At 6:30 AM, another survey of linen. A release of events was made to employees. A concentrated thorough search of the entire facility was started. A survey crew went to Oxford Laundry to survey facility. A survey team with nurse went to survey patient . Patient surveyed at 5:45 PM.
Results negative
Entire staff revising procedures to meet regulations and prohibit this from ever happening again.

Maxene Suerdieck, R.T.
Supervisor, Radiology Dept.

Attachment B
page 2 of 2

ALL AREAS OF HOSPITAL HAVE BEEN SURVEYED AS LISTED BELOW .
Every area of each hospital floor have been included.

East	NW	NE	SW	SE
Ground	Ground	Ground	GR	GR
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	
	5		5	
			6	
			7	
			8	
			9	
			10	

All Empress Hall survey except the Convent.

All of Wright State Medical building, Dental Clinic, computer center SEG all medical conference rooms, Dr.'s lounges, locker rooms

Cafeteria, Dr.'s dining area.

E locker rooms, NE lockers and restrooms

All stairwells.

Nuclear Medicine, Lab. Ct. scanning, Business offices, cashier's office.

Security office, outpatient bus. office, classrooms, restrooms Emergency Room waiting room.

Chaplain's office, mailroom, Derby Lounge.

All men & women locker areas. All restrooms on each floor.

Paint Shop, Yard Shop, Carpenter Shop.

Only areas not surveyed Convent, Accounting Offices, East Conference Room, Old medical education offices because of being unable to obtain key.

Attachment C
page 1 of 2.

ADDENDUM:

The Parking Garage, Accounting Offices, Business Office, Cashiers Offices have been surveyed as of 9/30/82.

Wednesday September 25,1982

Trip to Oxford Laundry to check facility where St. Elizabeth Medical Center's laundry is processed.

SURVEY TEAM:
Robert Lykins, R.T.
Carl J. Suerdieck

We arrived at the Oxford Laundry in Oxford, Ohio at approximately 7:15 PM, on September 29, 1982.

We met with the owner of the laundry and asked if he had been informed of the reason for our trip. He said that he had been and then he proceeded to guide us through the facility.

We went through the facility with a survey meter (geiger counter) checking all of the following items and areas for radioactive material.

1) Shipping and Receiving Dock, including rear end of loaded truck.
2) The Pre-sort area.
3) The Washer area - including machines and drain trench.
4) The Drying area.
5) The Folding area.
6) The Pressing area.
7) The Office area.
8) The Trash Container (all trash that is accumulated from the pre-sort area is placed in plastic bags and put into the trash dumpster. The dumpster is emptied 2 times per week.

9) A small cardboard container (about the size of a small bread box) where all items of questionable value are placed, and periodically sent back to the hospital. (items like surgical instruments, etc.)

After approximately 35-40 minutes of surveying the facility, we were satisfied that the material we were searching for was not on the premises.

Respectfully,

Carl J. Suerdieck

To: All Employees

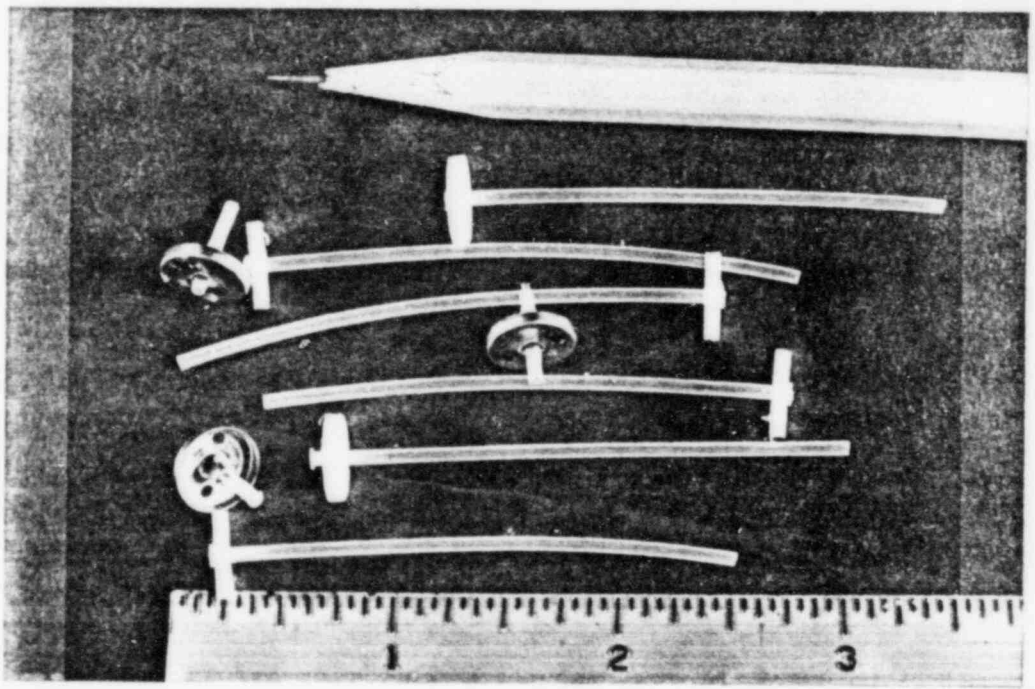
We are asking your cooperation as we conduct a precautionary survey of our facilities.

We cannot account for the disposition of some radioactive material used in the treatment of a former patient.

The amount and the activity of the material not accounted for is minimal. It could be harmful only to those who have been in close contact with it for an extended period of time.

The material consists of six strands of fine plastic tubing approximately 2½ inches in length. Each strand originally contained eight small copper-colored seeds of iridium, each about one-fourth inch long.

Our survey is a precautionary step to assure us that the material is no longer in our hospital.



9-29-82

Attachment D

Attachment E

Lost isotope: Missing iridium could harm an unsuspecting person

By Jim Babcock
Staff writer

"It's not a high-cost item. It's not something you can go up to someone on the street and say, 'Hi. You wanna' snort some iridium.' "

That statement was a St. Elizabeth Medical Center official's way Thursday of trying to put some perspective on the fact that the hospital has lost track of 48 seeds of iridium, a radioactive isotope used to treat cancerous tumors.

"I mean it's not likely that anyone would want to steal it for its value," said Dena Michaelson, a staff information specialist.

But it is possible that the iridium could do some localized damage to an unsuspecting person picking it up and pocketing it — and even more possible that St. Elizabeth has violated a U.S. Nuclear Regulatory Commission licensing requirement.

"When something of that magnitude is lost, it is supposed to be reported to us within 24 hours," said Russ Marabito, a public affairs officer at the regulatory commission's regional office in Chicago.

"They found in July that the seeds were missing. But we were not notified until Sept. 27."

Marabito also said it is possible that the medical center could be fined. "It's something that will have to be looked at by the NRC regional staff," he said.

"But our concern with these particular seeds is the fact that if someone holds them in the palm of their hand for a long period of time, or in a pocket for a long period of time, there could be a significant radiation burn. The concern is touching it."

St. Elizabeth made the fact of the missing iridium public in a statement issued Thursday afternoon.

The statement stressed that "the material does not pose a threat to the general public; however, an individual in direct possession of this material could be harmed."

Joan Thomas, hospital public information chief, said the statement was not issued "as a general public alarm, but hopefully so we can be aware of where it is; and hopefully so if somebody has touched it, they can be aware of it."

Thomas said the copper-colored iridium seeds are laminated into six fine strands of clear plastic, each containing eight seeds. The strands are about 2½ inches long and each seed is about one-fourth-inch long.

When used in radiation therapy, the strands are implanted around or along side, "localized, easily accessible" tumors to irradiate and kill cancerous cells. The implants are generally removed from the patients after a matter of hours.

Thomas said the six missing strands were removed from a patient in June, "and they have not been accounted for."

She said the loss was discovered in July during a required regular survey of records dealing with all radioactive materials used in the hospital's radiation therapy and diagnostic units — and of all materials on hand in the hospital's nuclear medicine storage vault.

But the disappearance was not reported to the NRC in July because "it was not reported to administration until September," she said — adding:

"Yes, that was a violation of hospital rules."

Thomas said there have been no disciplinary actions taken, but "we're dealing with the situation carefully and looking into it very thoroughly. We're not sure what we will encounter."

The NRC's Marabito said iridium emits gamma rays, which are generally stopped only by several inches of lead or several feet of water; but which are only moderately absorbed by the human body.

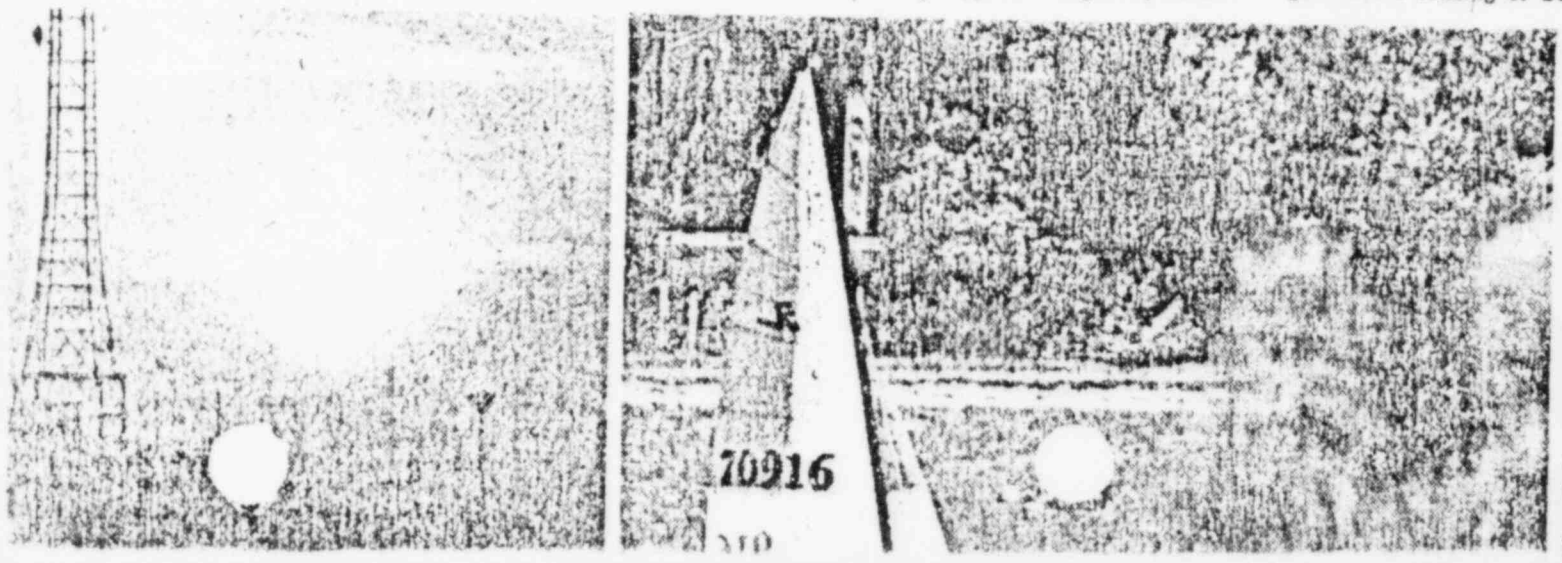
"They are quite strong. But like most radioactive material, it decays over a period of time. I've been told that at the time these strands were found to be missing, all six combined gave off a reading of 200 rem per hour, at the surface of the skin. The further away you would get, the would fall off. But since then, the measurement would be about 100 rem per hour.

"Iridium has something like a 7 day half-life — the time in which decays one-half of the strength it ha before."

Gamma ray radiation at the 100 rem level is about 2,000 times stronger than an X-ray radiation dose received during a typical chest X-ray.

"So you're talking about seeds right now that if you were to hold them in your hand and hold them for an hour you would get a radiation burn . . . like a sunburn. But if the stuff were 20 feet away, you wouldn't get anything, Marabito said.

"If you tossed them in the river nothing. If you just picked one up and threw it, not anything. But hold them or put them in your pocket, and after a couple of hours, you're going to start feeling discomfort."



Prices bid for schools way short

The Dayton school board li' ill have to resort to private sales to dispose of of the 15 properties it placed on the auction blo... hursday.

The buildings valued at $1.9 million attracted total bi...