

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 93-01

License No. 53-17797-01

Docket No. 030-13337

Licensee: Kuakini Medical Center
347 North Kuakini Street
Honolulu, Hawaii 96817

Inspection Conducted: February 8, and 12, 1993

Inspector: *Troy W. Pruett* 3/9/93
Troy W. Pruett, Radiation Specialist Date Signed

Inspector: *Kent M. Prendergast* 3/9/93
Kent Prendergast, Radiation Specialist Date Signed

Approved: *G.P. Yuhas* 3/12/93
Gregory P. Yuhas, Chief, Radioactive Materials Safety Branch Date Signed

Areas Inspected: Two special reactive inspections were performed on February 8, 1993, and February 12, 1993. The first inspection was performed to evaluate the licensee's response to a return shipment of compacted waste containing radioactive material from the H-Power Plant. The shipment was returned after it alarmed the radiation detectors at the H-Power Plant on February 2, 1993. The second inspection was performed to examine the licensee's response to a recordable event involving a patient's removal of brachytherapy sources prior to completing the treatment plan on February 11, 1993. The areas examined included procedures and representative records, and interviews with personnel.

Results: One violation, involving the failure to provide radiation safety training to individuals who entered a restricted area was identified (Section 3). In addition, the inspectors also discussed a potential need for radiation safety training and personnel monitoring for nurses who routinely handle diagnostic inpatients.

DETAILS

1. Persons Contacted

Licensee Personnel:

- *Michael C. Ling, M.D., RSO
- *Richard D. Wasnik, M.D., Head of Radiation Safety Committee (RSC)
- *Pat Dale, Senior Nuclear Medicine Technologist

* Present at Exit Meeting

2. Background

On February 1, 1993, the licensee performed an inpatient bone scan using technetium-99m(MDP). Following the procedure, the patient was returned to its room where diapers and shucks were removed from the patient and placed into ordinary trash.

On February 2, 1993, the H-Power plant radiation detector alarmed. Investigations by state officials indicated that the cause of the alarm was radioactive waste from Kuakini Medical Center. The waste compactor containing the waste was returned to Kuakini Medical Center at approximately 2:30 PM. Upon return of the container, two members of the housekeeping staff, under the direction of the RSO and a Senior Nuclear Medicine Technologist, entered the compactor to identify and remove the radioactive material. Four bags of radioactive material were retrieved from the compactor. The following measurements were obtained by the hospital staff.

<u>Bag Number</u>	<u>Exposure Rate On Surface</u>	<u>Activity</u>
1	1 mr/hr	1.3 uCi
2	4 mr/hr	5.1 uCi
3	16 mr/hr	20.5 uCi
4	.75 mr/hr	1.0 uCi

The measurements were performed with a portable G-M survey meter. The licensee's consultant identified the material as technetium-99m using a 2" X 2" NaI detector and multichannel analyzer.

On February 8, 1993, the inspectors surveyed the 4 bags of waste using a Ludlum Model 3 (NRC Serial Number 035644). All bags indicated background. The licensee then disposed of the bags as ordinary trash.

3. Training

- A. Based on discussions with the RSO, it appears that two individuals from housekeeping entered the waste compactor (restricted area) without having been specifically trained in the radiation hazards associated with the entry into the waste compactor as required by 10

CFR 19.12. The RSO stated that the most pressing safety concern was the biological hazard associated with entering the waste container. The RSO also stated, that all personnel who entered the waste container wore masks, gloves, overshoes, and overcoats and were under the supervision of the RSO and the Senior Nuclear Medicine Technologist. However, neither worker had been instructed in the health problems or procedures to minimize their exposure to radiation or radioactive materials as required by 10 CFR 19.12.

- B. The inspectors also discussed radiation safety training for nurses who routinely handle diagnostic inpatients with the RSO and Senior Nuclear Medicine Technologist. The RSO indicated that approximately 70 inpatient diagnostic studies are performed per month. The RSO stated that they had not evaluated dose or training needs for nurses who routinely handle inpatients containing diagnostic doses of radioactive materials. According to the RSO, training in radiation safety and personnel monitoring for nurses who routinely handle diagnostic patients will be discussed during the next RSC meeting.

One apparent violation of 10 CFR 19.12 was identified in this program area (93-01-01).

4. Waste Disposal

Based on discussions with the RSO and a review of records, the radioactive material identified in the waste compactor originated from an inpatient's room within the Kuakini Medical Center. The licensee determined the patient been injected with Tc-99MDP for a routine bone scan. According to the licensee, diapers and shucks had been contaminated with Tc-99m and had been disposed to the normal hospital trash. There are no provisions or special requirements for monitoring routine patient waste for radioactivity. The licensee has procedures and requires surveys prior to disposing of waste from the rooms of patients who have been administered greater than 30 millicuries of I-131 to meet 10 CFR 35.315. The licensee also has procedures and requires surveys prior to disposing of waste from nuclear medicine. However, there are no specific procedures or surveys required prior to disposal of waste from the rooms of patients having routine diagnostic procedures. NRC Information Notice, 91-03, Management of Wastes Contaminated with Radioactive Materials ("Red Bag" Waste and Ordinary Trash) pointed out a number of examples where low levels of radioactivity in nonradioactive waste streams were encountered and suggests the establishment of a system to monitor all trash prior to disposal. In this event, it appears the inadvertent disposal of items contaminated with Tc-99m from the room of a hospital patient was beyond the reasonable control of the hospital and not a violation of NRC requirements. To ensure a similar problem does not recur, the licensee is planning to purchase a NaI detector to monitor all trash before it leaves the hospital.

No violations or deviations were identified in the review of this program area.

5. Brachytherapy Incident

On February 11, 1993, a confused patient forcibly removed a cervical applicator containing 4 cesium-137 sources. The two attending nurses retrieved the applicator and placed it in the lead transport container, located in the patients room. The written directive was updated to reflect the actual dose received by the patient.

On February 12, 1993, the inspectors reviewed the circumstances involving the event mentioned above. Based on discussions with the Medical Physicist, the RSO, and a review of the incident report, it appears that the patient became confused and improperly removed the therapy device. The device removal was quickly detected by attending nursing staff and the apparatus was placed in the transport pig until the sources could be placed in the brachytherapy storage safe. The physician reevaluated the patients dose and determined there had not been a misadministration. The physician considered the dose adequate and therapy was terminated.

No violations or deviations were identified in the review of this program area.

6. Exit Meeting

On February 8 and 12, 1993, exit meetings were held with the persons noted in Section 1 of this report. The inspectors discussed the 10 CFR 19.12 violation and their concern involving the potential need for training and monitoring for nurses who routinely handle diagnostic inpatients. The inspectors also discussed the licensee's actions to retrieve the radioactive material from the waste compactor and their handling of the brachytherapy event.