

Actions Taken To Prevent Recurrence

Licensee—The licensee informed the State of Rhode Island the next day by telephone of the potential misadministration and provided a written report of the incident on February 14, 2002. In-service training has been conducted concerning the misadministration. In addition, the prescription form has been modified to indicate if the radius or the diameter of the vessel is being used for the treatment plan.

State Agency—The Agency has been in contact with the licensee concerning this matter and the effectiveness of the corrective measures implemented. The licensee indicated that there will probably be no adverse health effects to the patient. To date there has been no recurrence of the problem.

This event is closed for the purpose of this report.

AS 02-5 Strontium-90 Eye Applicator Brachytherapy at South Broward Hospital District in Hollywood, Florida

Date and Place—January 4, 2002; South Broward Hospital District, Hollywood, Florida.

Nature and Probable Causes—A patient was prescribed radiation treatment for pterygium in his left eye. The patient was to receive a total dose of 30 Gy (3,000 rad) in three 10 Gy (1,000 rad) fractions spaced approximately a week apart. Due to human error, the third and final fraction, given on January 4, 2002, was 24.84 Gy (2,484 rad) instead of the prescribed 10 Gy (1,000 rad).

The prescribed dose was to be administered via a 3M Company Model 6D1A eye applicator using a 973 MBq (26.3 mCi) strontium-90 (Sr-90) source. The written directive called for each fraction to consist of a treatment duration of 44 seconds to deliver a 10 Gy (1,000 rad) dose. The correct fractionated dose was administered as planned on December 20, 2001, and December 28, 2001. A routine administration of the eye applicator required one person to time the event with a stopwatch while the authorized user administered the dose. The nurse and the authorized user became distracted in conversing with the patient and lost track of the time. The stopwatch used was the old style that simply counted time up and the nurse lost focus in trying to make the patient more comfortable and at ease. The authorized user had to remind the patient to gaze in a certain direction to treat the affected area. As a result, the third fractionated treatment time was 109 seconds instead of the prescribed 44

seconds resulting in a dose of 24.84 Gy (2,484 rad).

The patient was counseled about the slight increase in late effects including cataract formation and scleral scar tissue formation.

Cause or Causes—The State found and the licensee agreed that the misadministration occurred due to human error and the failure of staff to attend to details as required in licensee's procedures.

Actions Taken To Prevent Recurrence

Licensee—The licensee has identified and made changes in their procedures for use of the Sr-90 ophthalmic applicator. The facility purchased a digital stopwatch that has a large display, counts time down and not up, audibilizes the time in the last 10 seconds, and alarms at the end of treatment. In addition, the nurse has been counseled and all personnel have received training in the revised procedures using the new stopwatch.

State Agency—The Florida Bureau of Radiation Control performed an on-site investigation on February 7, 2002, to review the licensee's corrective actions, which were found adequate by the State. The State also determined that while the patient was informed verbally of the misadministration, the licensee did not inform the patient in writing as required. The licensee was cited for failure to notify the patient in writing within 15 days.

This event is closed for the purposes of this report.

AS 02-6 Industrial Radiography Occupational Overexposure at Technical Welding Laboratory, Inc. in Houston, Texas

Date and Place—April 10, 2002, Technical Welding Laboratories Inc., Houston, Texas.

Nature and Probable Consequence—On April 10, 2002, a radiographer received an overexposure calculated at 0.70 Sv (70 rem) due to handling his radiographic equipment with the source in an unshielded condition.

The exposure occurred while conducting radiography using an Amersham 660 radiography exposure device (camera) containing a 1.30 TBq (35 Ci) cobalt-60 (Co-60) radiography source. At the conclusion of a radiograph, the radiographer cranked the source to the shielded position without conducting a survey and then repositioned the source guide tube for the next radiograph. When he attempted to crank out the source for the next radiograph, the radiographer realized the source had not been retracted to its fully shielded position and was

contained at the end of the guide tube. The radiographer notified the Radiation Safety Officer and returned to the office. The licensee then notified the State of Texas. While being interviewed for the event, the radiographer stated that although the camera's automatic locking mechanism was inoperable while performing radiography, he did not stop work and proceeded to complete the job. Subsequently, the licensee hired a consultant to check the equipment's operability and found no problem. The equipment was placed back in service with no repair necessary.

The radiographer was sent to a doctor, underwent blood tests and participated in a chromosome aberration study. Although the blood tests results were negative, the chromosome aberration study indicated a radiation exposure ranging from 0.70 Sv (70 rem) to 1.52 Sv (152 rem) with a 95-percent confidence level. In addition, due to the radiographer's difficulty in performing a good reenactment, a dose calculation of the exposure was difficult, however a consultant determined that an exposure of 0.70 Sv (70 rem) did occur. Although the radiographer stated that he could have possibly touched the end of the guide tube where the source was located, no erythema or blistering of the hand, as expected with an incident of this type was seen. A second consultant conducted calculations for a possible extremity exposure which resulted, in a possible 2.01 Sv (201 rem) exposure to the right hand.

Cause or Causes—It was determined that the cause of the overexposure involved the radiographer's failure to: (1) Wear his alarming rate meter; and (2) wear a personnel monitoring device.

Actions Taken To Prevent Recurrence

Licensee—The licensee terminated the radiographers employment and reviewed the incident with other radiographers employed by the company. A licensee consultant evaluation of the equipment determined that the camera was functioning properly.

State Agency—The licensee and radiographer were cited for not performing a lockout survey after a radiographic exposure, not using an alarming rate meter during radiographic operations; not using a collimator during radiographic operations and not using an individual monitoring device during radiographic operations. The licensee was also cited for allowing an individual to receive an exposure in excess of regulatory limits.

The licensee has since terminated its license and the radiographer no longer