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Date: July 16, 2009

To: All MDH Industrial Radiography licensees

From: Radioactive Materials Unit

Subject: Crimped Guide Tubes

Information Notice 2009-03

The Minnesota Department of Health (MDH) is issuing this Information Notice to inform licensees about two recent events in Minnesota involving crimped guide tubes.

Incident #1
On Wednesday May 20, 2009, at approximately 1300 hrs, a licensee was performing radiography at a temporary job site using a 41 curie Ir-192 source when the stand holding the guide tube fell from its secured position and landed on the guide tube near the camera, crimping the guide tube. The radiographer attempted numerous times to retract the source and was unsuccessful. The radiographer performed radiation surveys to reset the boundaries and contacted the management. The radiation safety officer was also contacted.

The Non-Destructive Testing (NDT) manager used steel plates for shielding in order to disconnect the guide tube from the camera. Once disconnected the manager proceeded to the collimator end of the guide tube and pulled the guide tube to allow the source to pass through the crimped portion. When the source passed through the kink, the radiographer cranked the source into its shielded position. The NDT manger received 121 mrem; the radiographer received approximately 40 mrem. Leak tests results indicate that the source was not effected. The guide tube has been discarded.

The root cause of the event was determined to be that the radiographers failed to ensure that all four legs of the magnets on the ring stand used to support the guide tube were not in contact with metal due to the curvature of the surface. The weight of the guide tube caused the stand to fall and to crimp the guide tube.

Incident #2
While conducting radiography of at a temporary job site on June 18, 2009, the licensee was conducting radiography of circumferential welds. At approximately 1220 hrs, the radiographers heard a "bang" from inside the horizontal heavy wall vessel. The licensee was using a 42 Curie Cobalt-60 source in an AEA 680 exposure device. The lead radiographer immediately attempted to retract the source but could not move the control handle. Thinking that the problem was the

result of a tight radius, the radiographer attempted to withdraw the guide tube from the tank. That effort was abandoned when the guide tube began to slide out of the vessel. However, the radiographer identified a dent in the guide tube that was approximately 18 inches from the far end. The source was shielded with 3/8 inch lead plates.

The radiographer conducted a survey and calculated the exposure to hammer out the crimp in the guide tube. After consultation with the Radiation Safety Officer, a radiographer approached the guide tube, turned it 1/4 of a turn, and hit it once with a hammer. The source was then successfully retracted.

Total doses for the retrieval were 190 mrem to the lead radiographer and 20 mrem to the second radiographer. The damaged guide tube has been removed from service.

The root cause of the problem has been determined to be that the guide tube was extended to its fullest length; therefore, the tension and/or weight of the tube caused the stand to fall over and crimp the guide tube. The corrective action was to add an additional guide tube and to secure the stand with weights to prevent tipping.

MDH cautions all industrial radiography licensees to use appropriate precautions to prevent support stands from falling or tipping.

Licensees are reminded of the 24-hour notification requirement in 4731.3110.[1] For industrial radiography, the 24-hour notification includes any event in which equipment is required to be available and operable when it is disabled or fails to function. That includes:

- unintentional disconnection of the source assembly from the control cable;
- inability to retract the source assembly to its fully shielded position and secure it in the fully shielded position; or
- failure of any component, critical to safe operation of the device, to properly perform its intended function.

A licensee must also provide a written report to the commissioner within 30 days of the occurrence in accordance with 4731.4350. MDH is considering a rule change to clarify the notification and reporting requirements.

[1] Referenced in 4731.4350 Subpart 1.