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To: Medical Licensees Authorized Therapeutic Uses of Iodine-131

From: Radioactive Materials Unit

Subject: Guidance on Release of Thyroid Cancer Therapy Patients Administered Radioactive Iodine

Information Notice 2008 - 04

The Minnesota Department of Health is issuing new guidance to medical licensees to strengthen existing precautions against the possibility that infants and young children who come in contact with thyroid cancer patients may receive unnecessary doses of radiation.

In March of 2007, MDH published guidance on *Release of Individuals Containing Unsealed Byproduct Material or Implants Containing Byproduct Material*. The document mirrored the change implemented by the NRC in 1997 in which the activity-based or dose-rate-based release limit was replaced with a limit based on the projected radiation doses to other individuals exposed to a patient released after therapeutic administration of radionuclide, such as oral sodium iodide I-131. These dose-based release limits used assumptions that the internal doses for individuals who may come in contact with released patients were very small compared with doses from external exposures. Also, these criteria were consistent with the recommendations of the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP) at the time.

However, in ICRP Publication 94. *Release of Patients after Therapy with Unsealed Radionuclides*, published in 2004, ICRP cautioned that the internal dose to the thyroid for infants and young children who may come in contact with a patient who was administered therapeutic quantities of I-131, such as oral sodium iodide I-131, has the potential to be far greater than the dose from external exposure. ICRP Publication 94 states that “contamination of infants and young children with saliva from a treated patient during the first few days after radioiodine therapy could result in significant doses to the child’s thyroid, and potentially raise the risk of subsequent radiation-induced thyroid cancer.” This statement was repeated in the new comprehensive radiation safety recommendations in ICRP Publication 103, *The 2007 Recommendations of the*

International Commission on Radiological Protection. Specifically, the 2007 publication states that particular care should be taken to avoid the contamination of infants and children from patients treated with radioiodine.

To satisfy the requirements of 4731.4427, licensees must provide patients or their guardians with instructions, including written instructions, on actions recommended to maintain doses to others as low as reasonably achievable if the total effective dose equivalent to any other individual is likely to exceed 0.1 mrem (1 mSv). The current guidance suggests that licensees consider the following:

- A recommendation that patients avoid direct or indirect contact with infants and young children for a specific period of time, for example by having the children stay outside the home with other family members;
- A recommendation for patients to have adequate living space at home (such as a bedroom and bathroom) that can be used exclusively by the patient for a specific period of time; and
- Information on the potential consequences, if any, of failure to follow these recommendations.

The guidance now suggests that licensees also consider hospitalization for patients whose living conditions may result in contamination of infants and young children because they can be more sensitive to radiation than adults. The specific period of time for patients to follow these recommendations would be determined by the physician, depending on the amount of Iodine-131 administered; typically, this period would be for two to seven days following treatment.

As discussed during the Physicist Meeting on December 19, 2007, MDH would discourage physicians from suggesting that patients use hotels as an alternative means of separation from infants or young children. That practice has proven to cause significant exposure concerns to hotel property, housekeeping staff, and guests.

This guidance has been incorporated in *The Regulatory Guide for the Release of Individuals Containing Unsealed Byproduct Material or Implants Containing Byproduct Material* as Appendix C. The publication can be found on the Radioactive Materials Unit's web site, which is: www.health.state.mn.us/ram