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To: Funeral facilities performing Alkaline Hydrolysis (AH)

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Subject: Performing Alkaline Hydrolysis on human remains containing radioactive materials

Information Notice 2012-01

The Minnesota Department of Health (MDH) is issuing this Information Notice (IN) to inform facilities using alkaline hydrolysis (AH) to process human remains of the potential to encounter sources of radiation during this process. Although the likelihood of exposure to radiation levels that meet or exceed regulatory limits is remote, MDH is informing facilities of potential risks and methods to ensure health and safety when handling these sources.

Radiation sources in humans can come from two types of medical intervention; nuclear medicine diagnostic studies and therapeutic procedures involving radioactive isotopes. Medical facilities are required to ensure that patients treated with radiopharmaceuticals are not released until they present negligible risks to the public. Use the following information to determine potential risks in performing AH after obtaining medical information from family members.

Diagnostic Nuclear Medicine Procedures

Diagnostic nuclear medicine procedures include scanning procedures following an injection of some radioisotope; i.e. PET scans or gamma scans. These do not include general X-rays, CT, or MRI studies. Isotopes used in diagnostic procedures are delivered in relatively small doses and have short half-lives, usually several hours or less. Typically, these isotopes decay away in a few days. The general rule is that after seven half-lives less than 1% of radioactivity remains. Unless a nuclear medicine procedure was performed within a few hours of receiving the body, there will be minimal risk of radiation exposure to the persons performing AH. Standard universal precautions should be sufficient to protect from potential risks from diagnostic procedures. Below are examples of radioisotopes used in diagnostic nuclear medicine procedures and the half-life associated with each.

Isotope	Half-Life
Technetium-99m	6 hours
Fluorine-18	110 minutes
Thalium-201	73 hours
Iodine-123	13 hours
Indium-111	67 hours

Therapeutic Procedures Using Radioactive Material

Radioactive material used in therapy procedures is often in higher doses utilizing longer-lived radioisotopes. Typical therapy procedures include prostate seed implants, palliative bone cancer treatment, and thyroid ablation. Radiation therapy using external beam (accelerators) will not pose a threat to persons performing AH. In therapeutic cases, information provided by the family or medical facility may be necessary to determine the level of risk.

The extent of radiation exposure to persons performing AH procedures will depend on the type of radiation, the amount of activity remaining, the site of implant, and the management of the body. If a permanent implant remains sufficiently radioactive to be a radiation hazard, radiation safety instructions should be provided by the facility which administered the implant.

Precautions incorporated for AH procedures should be considered similar to those taken for cremation. Encapsulated radioactive sources will remain intact following the AH process. If the activity exceeds radioactive material exempt levels, it may be desirable that these sources do not enter the AH process. If there are concerns that this level may be exceeded, the Radiation Safety Officer of the treating facility should be available for consultation and monitoring. Below are examples of radioisotopes used in therapeutic procedures and the half-life associated with each.

Isotope	Form	Half-Life
Palladium-103	seeds	16 days
Iodine-125	seeds	59 days
Cesium-131	seeds	10 days
Gold-198	seeds	2 days
Iodine-131	liquid capsule	8 days
Strontium-89	injected liquid	50.7 days
Samarium-153	injected liquid	2 days
Yittrium-90	microbeads or injected liquid	2.7 days