

Avoiding Solid Waste Contamination Problems from Iodine-131 Patients



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In December 1990, a Petition for Rulemaking was submitted to the Nuclear Regulatory Commission requesting abandonment of the "30 mCi Rule" and its replacement with a requirement based on an anticipated limit of 500-mrem radiation

absorbed dose to a member of the public. This replacement, essentially the recommendations of NCRP no. 37 (published in 1970), was approved and became effective May 29, 1997. It is commonly known as the "Patient Discharge Rule" and was published in the Federal Register (1997;62:4120). This rule will enable most patients requiring high-dose sodium iodide for thyroid cancer to be treated as outpatients, provided that the physician can show appropriate calculations to assure public doses within the 500-mrem limit. This means that patient-contaminated articles that were formerly collected and decayed out by the nuclear medicine licensee are now often destined directly for discard in sanitary landfills by outpatients.

The appearance of sensitive radiation detectors at sanitary landfills and solid waste transfer and processing sites throughout the country has resulted in identification of contaminated articles and body fluids from nuclear medicine patients. Iodine-131 is a special problem because it does not decay significantly by the next day. The problem of ¹³¹I contamination is expected to become more frequent with the new Patient Discharge Rule. In addition to the usual instructions for reducing exposure to family members and others, here are some recommendations for nuclear medicine physicians when counseling patients receiving ¹³¹I therapy.

1. Do not use paper plates or disposable cups or flatware. Use regular dishes, glasses and utensils. Wash them in the sink or dishwasher. This keeps contaminated articles out of household trash.
2. Tissues and paper napkins should go in the toilet (if plumbing allows), not the garbage.
3. Because saliva contains significant ¹³¹I activity, food residues contaminated with saliva can be a problem. Apple cores, barbecue ribs, fried chicken and corn on the cob are examples of foods that contribute to radioactive residue and should be avoided the first week after therapy.
4. Articles contaminated with body fluids that cannot be washed clean or disposed of in the toilet should be saved in a doubled plastic bag and returned to the physician administering treatment after one week. The physician can decay it until it can be discarded without the risk of setting off alarms. How-

ever, such articles are not regulated material and the physician has no obligation to label them, keep records or observe other requirements for regulated material. Another alternative would be for the physician to survey patients' waste but not take custody of it, and advise the patient as to when it can be discarded.

The key point is for the physician to explain clearly to the patient that body fluids will be radioactive for a period of time, and if any articles or items with body fluid on them are discarded, they may set off a radiation alarm at the local sanitation landfill. This can result in an expensive search for the cause of the alarm. Such waste has been tracked back to patients who were then billed for the expense.

Landfills, solid waste processing sites and medical waste treatment sites are not permitted to accept radioactive material and have set detectors to find and exclude such waste. However, there are locales that have developed criteria in cooperation with their nuclear medicine community and state radiological health programs that allow disposal of short-lived nuclear medicine patient-contaminated trash while protecting against handling of illegally discarded radiation sources.

Contact your state radiological health unit to learn what, if any, patient waste disposal criteria are in place. If no standards exist, you may want to work with the unit to develop workable solutions for waste disposal. Remember, however, that the first step is ensuring that your patients are well-informed participants in their own treatment.

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Editor's Note

For those institutions that do not have written instructions for radioiodine therapy patients, the SNM pamphlet "Guidelines for Patients Receiving Radioiodine Treatment" may be used to meet the NRC requirement for written instructions about general precautions for reducing radioactive contamination of other people. Contact the SNM Publications Department for more information at (703) 708-9000, x 223.