

DOCKET NUMBER

PETITION FILE PRM 35-18
(70FR 75752)

(29)

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Date: Thu, Mar 2, 2006 4:04 PM

DOCKETED
USNRC

March 2, 2006 (4:59pm)

Secretary, U.S. Nuclear Regulatory Commission
Attention: Rulemaking and Adjudications Staff

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Re: PRM-35-18

This comment addresses the proposed rule which would alter the criteria under which patients are released from hospitals following treatment with radioactive iodine-131.

I am a practicing medical physicist with over 25 years of experience, certified in medical nuclear physics by the American Board of Radiology. Earlier in my career I had been a certified nuclear medicine technologist. Thus, I have been actively involved in the treatment of patients with iodine-131 for various thyroid disorders, including cancer, for over 30 years. Moreover, I have taken a special interest in such treatments, and I have written a scientific paper on the subject, "The Effective Half-Life of 131I in Thyroid Cancer Patients", published in September, 2001 by the journal Health Physics. That work was based on data from 268 administrations of iodine-131. Currently my files contain information from over 600 treatments, including a few with benign conditions such as multi-nodular and toxic goiters. At our institution we treat about 100 patients per year for thyroid cancer, virtually all the new cases expected annually in Rhode Island. I have personally been involved with at least a hundred cases over my career. In short, I know whereof I speak.

The arguments of the petitioner, who asserts legal and policy grounds for his action, nevertheless have no factual or scientific basis. Indeed, the NRC was correct 1997 when it ruled in favor of shorter hospital stays and costs. About 60% of our thyroid cancer patients are treated as outpatients. Admitting these people, who are almost without exception very capable of taking care of themselves, would markedly increase the burden on our hospital's staff and finances.

We require admission if the activity prescribed to be administered exceeds 100 mCi of iodine-131 (40 mCi if for non-cancer). The mean outpatient dose is 94 mCi. We survey them all before release, and the average maximum exposure rate (usually anteriorly) is 17.3 mR/hr at one meter. Since the mean effective half-life of the radionuclide is about 17 hours for the "unbound" iodine-131, a calculation following the NRC's method in Appendix U of NUREG-1556 gives an exposure to a family member of roughly 100 mR. This is in no way excessive. Even an exposure of 500 mR does not approach what many human beings receive on this planet from natural background radioactivity.

In spite of what the petitioner claims, almost all thyroid cancer in-patients are eager to leave the hospital and be with their families. The few exceptions tend to be young mothers with infants at home who appreciate the short break from their routines. We give them written, common-sense instructions which everyone to date has been able to understand. Vomiting by these people is extremely rare (I can remember only one or two incidents), and those very few people who are highly concerned about radiation exposures after they go home usually stay with older relatives or in a motel for a few

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days.

I presently am preparing a scientific manuscript for publication which reports the results of thyroid assays which I performed on the families of 22 patients who had received an average of 148 mCi of iodine-131 as in-patients. I counted their thyroids with a very sensitive sodium iodide scintillation detector that we also use for assays of researchers following radioiodination procedures. I assayed 43 people. Only three of them were positive, and the maximum thyroid burden was less than one-tenth of a microCurie. The transmission factors from patient to co-habitant were on the order of or less than one part in ten thousand. Clearly then, the spectre of contamination which the petitioner conjures does not exist.

The NRC's position that treatment for thyroid cancer occurs "probably no more than once in a lifetime" is indeed valid. About 90% of our cases are treated only once with iodine-131. For the great majority of the remainder, a second dose is all that is needed. Very few require three or more (the "champ" has currently had five).

In summary, despite the petitioner's previous employment with the NRC (and the possibility that he himself may be a thyroid cancer patient), he really does not have the professional knowledge and experience for his arguments to carry much weight. The 1997 rule change was quite a boon to our radiation safety staff and the hospital in general. I firmly hold that within that framework, we do a good job of caring for our patients and their diseases while we safeguard the well-being of those who are close to them. I urge the NRC to leave the requirements of 10 CFR 35.75 and the associated guidance just as they are.

Thank you for your attention,

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