

## Panel Discussion

### Management of Radioisotopes for Medicine

#### Management of Human Materials and Contaminated Waste

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Environmentally, there are various difficult problems with respect to managing radioisotopes and materials contaminated by them.

By questionnaire, the lecturer asked about the following problems of RI managers:

1. How are human material to be collected?
2. How should we dispose of liquid and solid contaminated waste?
3. How should dispose of or treat contaminated gases?
4. How should we treat and prevent infections of radiological staff?

Answers were obtained from 32 institutes, mainly universities, as follow:

1. Although it would be ideal to admit patients receiving diagnostic doses, this is impractical today.  
Use of nuclei with long half lives and

large volumes of nuclei with short half lives should be withheld.

2. Solid contamination should be retained until its radioactivity is reduced.  
Only heavily contaminated substances should be submitted to the RI association. With contaminated liquids, it is not only important to consider their dilution with large volume of water, but also their preservation and their discharge after reduction of their radioactivity.
3. The <sup>133</sup>Xenon trap is most effective though expensive. The National Aid Constitution should authorize expenditures for its use.
4. A suitable means should be established to prevent bacterial and viral infections among radiological staff.

#### How to Treat the Patient in the Clinical Nuclear Medicine?

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When we administer radioisotope to the patient, it is very important not only to gather

the clinically useful data, but also to reduce the radiation hazards and the patient's anxiety as possible as we can. In order to know the present state of the daily practice of nuclear medicine especially in treating patient, the questionnaires were sent to the councilors of Japanese Society of Nuclear Medicine, and eighty-nine answers were collected. To a question "How do you explain to the patient when administer radioisotope?": Most doctors replied that they made a patient understand by explaining the clinical necessity of using radioisotope. Some doctors compared its hazard with those brought by X-ray examinations, or other danger such as produced by a motor-car. But sometimes the examination was performed without telling the patient to use the radioisotope. To a question "How do you explain the patient when you transpost the patient to the radioisotope ward from the usual ward?": Most doctors answered that they made patient understand by telling that the radioisotope can be nuisance to the others while it is very profitable to the patient. Some doctors told a patient the law that the patient must be in the radioisotope ward. To a question "Do you have the experience that you could not perform the medical treatment using radioisotope which was necessary clinically?": About 50% of doctors answered "Yes". And their chief reason was the unsatisfactory equipments and facilities at their hospital. In order to calm the patient's uneasiness, some doctors give the print which is explaining the usefulness and safety of the radioisotope, give the chance to see the examination of the other patient or make the other personnel except the doctor explain the procedure. To a question "In view of the risk of the radioi-

sotope, who is the best to take care of its clinical use in the hospital?": Most doctors answered that the use of radioisotope should be in the hand of the radiologist in a broad sense, and some replied that the doctor could use radioisotope only under the direction of the special doctor. To a question "In order to reduce the radiation dose of the personnel working in radioisotope facilities, do you have any special procedure?": Most doctors replied that they inject radioisotope by turns in order to reduce the individual radiation dose using a injector covered with a shield, especially using  $^{99m}\text{Tc}$ . And after the administration of radioisotope they made efforts to shorten time to be near at the patient, to screen the patient and so on. To a question "How large is your radioisotope facilities?": Most doctors answered that the number of doctors was from one to five, nurses from one to three, beds from three to seven, technicians from one to seven, and clerks from one to three. But they insist that the following staffs and facilities are necessary in a hospital with 800 beds; 5 to 10 doctors, 5 to 10 nurses, 10 to 20 beds, 5 to 10 technicians and 3 to 5 clerks.

Judging from those answers it is concluded that radioisotope facilities and staffs nowadays are far from the satisfactory state, and require lots of improvement so that the patient may receive the available profit of the modern medicine.

Finally in selecting radioisotope we have, of course, to choose the drug which induce minimal radiation dose. Furthermore, when we administer radioisotope to babies or children we must pay special attention, because it is acknowledged that radiation dose is much larger in pediatric patients than in adult.