

## Q. Radiation Protection

### An Apparatus for the Decontamination of the Urine of Patients Treated with $^{131}\text{I}$

T. TSUCHIYA

*National Institute of Radiological Sciences*

K. ITO, E. INO, T. SAITO, and S. NAKAGAWA

*Ito Hospital, Harajuku, Tokyo*

H. SUGIYAMA, K. KURATA, and Y. SUGISAWA

*Dainabot Radioisotope Lab.*

It is well known that very large storage tanks for radioactive liquids are necessary for the disposal of wastes such as urine, serum, and water contaminated with radioactivity into a drainage system according to legal restrictions which require the radioactivity to be kept at certain low levels. Such tanks, however, are very expensive and also require much space.

In order to combat this problem we designed a new apparatus for the disposal of the contaminated urine of patients with hyperthyroidism who have been treated with  $^{131}\text{I}$ . The apparatus has a lead shield box in which are placed two cylinders containing synthetic resin.

The two cylinders are of the same shape and

size and contain the same volume of resin. The first cylinder is connected to a siphon-like tube to the second cylinder and the second cylinder is connected by a siphon-like tube to the drainage pipe.

The urine is thrown into the first cylinder through a funnel at the top of the shield box, and it flows into the drainage pipe after passing through the two cylinders.

The radioactive level of the urine thus disposed is lowered by more than 99%. This apparatus is small and portable and handles very easily. We are now in the process of attempting to make it more compact.

### Removal of $^{57}\text{Co}$ -Bleomycin from Urine

K. TORIZUMI, T. MISHIMA, M. MAEDA, R. NEGORO, Y. FUJINO and K. HORI

*Department of Radiology, Wakayama Medical College*

$^{57}\text{Co}$ -Bleomycin is one of good tumor scanning agents, but its 270 days physical half life might be too long.  $^{57}\text{Co}$ -Bleomycin is rapidly eliminated

through kidneys after injection; about 90% of radioactivity is found in urine in the first 24 hours. Therefore, environmental contamination by  $^{57}\text{Co}$ -

Bleomycin is a great problem.

So, we studied the methods of the removal of  $^{57}\text{Co}$ -Bleomycin from urine. In this paper the results by the following four methods are described.

#### 1) Boiling Method

The urine is boiled with the filter paper. Water is escaped in vapor, and as a result  $^{57}\text{Co}$ -Bleomycin is adsorbed in the filter paper.  $^{57}\text{Co}$ -Bleomycin is not volatilized. The removal efficiency of filter paper was more than 96% under different condi-

tions of urines.

#### 2) Charcoal Method

(Removal of  $^{57}\text{Co}$ -Bleomycin from urines by "SIRASAGI-A" charcoal) a, Centrifuging Method b, Column Method c, Precipitation Method.

The removal efficiency from 1500 ml of urine by each of the three method was about 95% with 4–5 g of charcoal at 18°C, that is, there was no difference. In order to use the charcoals with good performance, it was necessary to be removed within two days.

### Survey of Radiation Hazards of Personnel's Finger from Handling Radioisotope

H. MAEKOSHI

*Radiological Technician's School affiliated to Nagoya University, School of Medicine, Nagoya*

S. KOGA

*Department of Radiology, Fujita-Gakuen University, School of Medicine, Nagoya*

K. NISHIZAWA

*Department of Radiology, Nagoya University, School of Medicine, Nagoya*

The usage of the short lived radionuclide has been considerably increased in the clinical nuclear radiological field. The radiation dose to the fingers of the radiation workers is considered to be increased, since the radionuclides are injected to the patient's vein manually. In this point of view, the survey of the radiation hazard in the fingers of radiation workers were planned.

Questionnaire cards randomly delivered to 682 members of the Japanese Society of Nuclear Medicine. Of these, 135 physicians, 60 radiological technicians and 27 others were responded, so that the percentage of recovery was 32.5%.

The following items—(1) an occupational cate-

gory (2) the numbers of year engaged in nuclear medicine (3) activity in mCi of radionuclides using in a week (4) whether the syringe was always shielded or not (5) survey of the hazard of finger according to the symptoms of finger of which the personnel is found (6) survey of the personnel's finger-prints—were investigated.

As the results, the abnormal finger-prints were found in 3 physicians. The usage of shielding of the syringe was found in 25.3%.

This investigation will be continued for a certain period by the serial finger-print survey for detection of radiation hazards in the workers finger.