

tion of ^{131}I and without urination during first 2 hours, give the counting-rate variations of 5 to 30% within this period. The whole body counts should be the same while the RI dose in the body is same, inspite of the RI distribution in the body. From the fact that the counting rates of the scattered region measured by the differential setting are fairly constant, even if the RI distribution in the body varies, it is suggested that there would be the best method of counting among the differential and integral countings. Five different energy bands of ^{131}I gamma-ray spectrum were chosen for the measurements of patients and phantoms. They are (1) photopeak: 314—414 keV, (2) scattered region: 200—300 keV, (3) scattered region: 120—220 keV, (4) scattered region: 30—130 keV, and (5) integral over 30 keV. In this experiment, the variation of RI distribution in the patient's body is replaced by the thickness variation of the water phantom with ^{131}I or the depth variation of the ^{131}I point

source in the water phantom. The counting rate vs thickness of the water phantom with ^{131}I is checked with five counting methods. The curve of the photo-peak measurement is exponential and the differences of the counting rates were the largest, while the scattered-region countings (except for 30—130 keV) and the integral counting gave the smallest differences of counting rates for the thickness variations of the water phantom. The geometric means of two-directional countings of the ^{131}I point source in the various depth of water give more constant counts than the arithmetic means in the photo-peak measurement. In case of the scattered-region countings and the integral counting, the arithmetic means are better than the geometric means. The counting methods of scattered region of 120—220 keV and integral are superior to the other three. The same results were obtained with the patients' countings.

Experiments on the Medium Level Whole Body Counter

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1. The medium level whole body counter, manufactured at the ORINS medical Division, Oak Ridge, Tenn. has four detectors, which consist of four $3'' \times 3''$ NaI crystals in a trough-like container of $1\frac{1}{4}''$ thickness. This machine is suitable for the measurement of the radioisotope range of 0.1~100MC in a patient's body, namely is used for the medium level range of sensitivity between high and low level counters.

2) When the ^{131}I capsule is given to a

patient, at first it shows a point source in the stomach. If the capsule is solved, ^{131}I will be absorbed by the gastrointestinal tract and it will circulates in the blood through the body. Then it is taken up gradually by the thyroid gland.

3. The counting was made both at the peak region of ^{131}I and at the scattered region, and the data were compared each other. Better results were obtained when ^{131}I was measured at the scattered region.

On the Conception of Medical Universal Human Counter

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Since a radio-pharmaceutical is administered to a patient in clinical tracer studies except for a measurement of natural ^{40}K , as

for a medical human counter its clinical usefulness is more preferable to its sensitivity.

No one wants to be confined in a steel