

## Evaluation of Performance of Focused Collimator Available by Japanese Manufacturers

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According to the scheme developed by G.J. Hine, IAEA, geometrical specifications of focussed collimators currently produced and used widely in Japan were evaluated.

Collimators examined were the products from the three companies, Shimadzu, Toshiba and Aloka. Four collimators from Shimadzu, 5 collimators from Aloka and 4 collimators from Toshiba, were examined and described by three parameters using two sets of line-source ( $^{131}\text{I}$  and  $^{141}\text{Ce}$ ) in the air.

The application of this method to the com-

mercially available focused collimators turned out to be of the general usefulness, because this project allowed a first direct comparison of Japanese collimators each other. Several collimators were found to have severe septum penetration for  $^{131}\text{I}$  source. Probability of improper design of the lead shield as a cause of the severe septum penetration is now also being examined.

Presentation of the results were made as a part of the extensive survey operated by the Agency for the presently available collimators.

## Clinical Application of Catheter-type Semiconductor Radiation Detector

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Since 1965 catheter-type semiconductor radiation detector (CASRAD) has been developed and applied for the medical use by the authors. The development of the detector and its application to circulation study in dogs were reported in this meeting previously. Recently the CASRAD probe has been further reduced in size so that it is able to be inserted into human heart through the cubital vein with ease and safety. Purpose of this paper is to present the application of CASRAD for the measurement of coronary blood flow in man and detection of gastric cancer.

### 1. Measurement of coronary blood flow

A CASRAD probe of which diameter is 2.7 mm (CASRAD TCK Type-2) was inserted into the coronary sinus through the cubital

vein. After the injection of  $^{85}\text{Kr}$  saline solution in the left ventricle through cardiac catheter, radioactivity of  $^{85}\text{Kr}$  washed out from the myocardium was detected by CASRAD probe. The clearance curve was analysed and myocardial blood flow per 100 g of myocardium was obtained. The validity of this method was examined *in vitro* using flow model before applied to clinical cases, in which good agreement between actual flow values and calculated flow values were shown when adsorption of  $^{85}\text{Kr}$  by the detector surface was subtracted. Coronary blood flow measured in 4 control cases, twice in each case. The obtained coronary blood flows were 105 ml/1500g/min. (141 when repeated), 78(85), 128(117) and 85(75) which showed good reproducibility.