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TÍTULO **EVALUATION OF ION CHAMBERS AND RADIATION MONITORS USED ON DIAGNOSTIC ENERGY RANGE**

TITLE **EVALUATION OF ION CHAMBERS AND RADIATION MONITORS USED ON DIAGNOSTIC ENERGY RANGE**

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Resumo: **Introduction** Radiation monitors and ion chambers are currently used in laboratorial evaluation of x-ray equipments, radiation surveys or quality assurance procedures. Commonly found detection systems provide resources to combine different chambers and monitors without lost of response sensitivity. Moreover, many of these devices provide rate or integrated mode of operation. This work shows a methodology used for evaluation of commercially available chambers and monitors in order to provide confidence limits for these operational resources. Reproducibility was also evaluated by using six different monitor-chamber sets. Performance results will be presented.
Materials and Methods A groups of six Radcal (Radcal Co) 10x5-180 ion chambers coupled to four 9015 and two 9010 monitors were evaluated by measuring dose and dose rate in three different positions around a pmma phantom (Fig.1). The measurements were taken by using a Siemens Gigantus x-ray equipment controlled by a Dynalyzer III high-voltage divider. This equipment is part of a reference system of the Electromedical Equipments Laboratory of IEE/USP. A 2.5 mm HVL X-ray beam was applied. The voltage divider was used in order to control exposure time, high-voltage and the current applied during the experiments. The voltage accuracy of this system was better then 1.3% for 60 kVp and time accuracy better than 0.8% for 1.3 sec exposure time. Dose and dose rate relationships were evaluated by multiplying the dose rate reading by voltage divider time measurement and comparing the results to integrate dose readings.
Results Systems reproducibility show an average value of 3.7% in dose and 3.9% in dose rate operation modes. The results were independent of chamber position. Dose and dose rate comparison show results better than 5.9%.

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