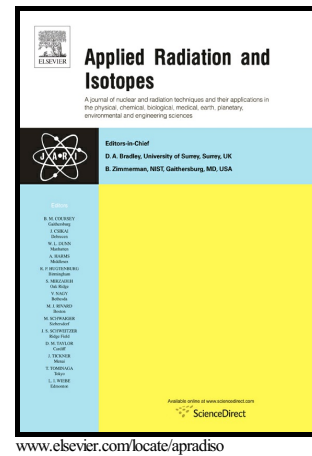


# Author's Accepted Manuscript

Verification of absorbed dose rates in reference beta radiation fields: measurements with an extrapolation chamber and radiochromic film

S.R. Reynaldo, J.A. Benavente C., T.A. Da Silva



PII: S0969-8043(16)30072-0  
DOI: <http://dx.doi.org/10.1016/j.apradiso.2016.02.007>  
Reference: ARI7399

To appear in: *Applied Radiation and Isotopes*

Received date: 28 October 2015  
Revised date: 12 February 2016  
Accepted date: 15 February 2016

Cite this article as: S.R. Reynaldo, J.A. Benavente C. and T.A. Da Silva Verification of absorbed dose rates in reference beta radiation fields measurements with an extrapolation chamber and radiochromic film, *Applied Radiation and Isotopes*, <http://dx.doi.org/10.1016/j.apradiso.2016.02.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

## Verification of absorbed dose rates in reference beta radiation fields: measurements with an extrapolation chamber and radiochromic film

S. R. Reynaldo, J. A. Benavente C., T. A. Da Silva\*

Centro de Desenvolvimento da Tecnologia Nuclear, CDTN. Av. Presidente Antônio Carlos 6627, 31270-901 Belo Horizonte, MG, Brazil

\*Corresponding author: Centro de Desenvolvimento da Tecnologia Nuclear, CDTN. Av. Presidente Antônio Carlos 6627, 31270-901 Belo Horizonte, MG, Brazil. Tel.: +55 31 30693121. E-mail address: silvata@cdtn.br

### Abstract

Beta Secondary Standard 2 (BSS 2) provides beta radiation fields with certified values of absorbed dose to tissue and the derived operational radiation protection quantities. As part of the quality assurance, the reliability of the CDTN BSS2 system was verified through measurements in the  $^{90}\text{Sr}/^{90}\text{Y}$  and  $^{85}\text{Kr}$  beta radiation fields. Absorbed dose rates and their angular variation were measured with a 23392 model PTW extrapolation chamber and with Gafchromic radiochromic films on a PMMA slab phantom. The feasibility of using both methods was analyzed.

Keywords: beta secondary standard, absorbed dose rate measurements, extrapolation chamber, radiochromic film.

### 1. Introduction

Reference beta radiation fields produced by radionuclide sources to be used for calibrating and determining the angular response of protection level dosimeters were specified by the International Organisation for Standardisation, ISO (2006). The Beta Secondary Standard

Download English Version:

<https://daneshyari.com/en/article/5497892>

Download Persian Version:

<https://daneshyari.com/article/5497892>

[Daneshyari.com](https://daneshyari.com)