

studied for airways representing both the upper and the deeper regions of the human and rat lung. The effect of secondary flows on particle deposition in airway bifurcations has been analyzed both for inhalation and exhalation. Beside the analysis of single bifurcation units, deposition patterns in total rat lung have also been computed. Together with the previously analyzed tracheobronchial morphometric data they form the basis of a stochastic model of the whole rat lung. Total and differential deposition fractions of inhaled particles were computed with this stochastic model.

*biological localization:* bronchi; *contamination:* exhalation; *inhalation:* lungs; *man;* *radioactive aerosols;* *rats;* *spatial distribution.*

*MAN:* *contamination;* **RADIOACTIVE AEROSOLS:** *biological localization.*

## Bangladesh

**BD9400001 Dose measurements in neutron-gamma mixed radiation field with thermoluminescence dosimeters (TLDs).**

*Topic codes:* I; V.

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*Sponsoring Organization(s):* Bangladesh Atomic Energy Commission (Ramna, Dhaka-1000).

*Organization Type:* Foundation or laboratory for research and/or development

*Collaborating Organization(s)* Bangladesh University of Engineering and Technology, Department of Physics (Dhaka); The Atomic Institute of Austrian Universities (Schuttelestrasse 115, A-1020 Vienna, Austria).

*Program Duration:*

From 1990.01

To 1995.12

*Status of Advancement:* Preliminary reports available.

*INIS categories:* E41.10, C55.00

Personnel working in and around the nuclear installations like reactors, accelerators, neutron sources, etc. are likely to be exposed to ionizing radiations which are hazardous to human healths and other living organisms. Among all the radiations released from the nuclear installations, the most penetrating are neutrons and gamma rays and they constitute the major external exposure hazard to occupational workers. In order to control radiation hazards, it is mandatory to assess the degrees of radiation hazards due to neutron and gamma rays of workers particular and members of the public if and when necessary. Thermoluminescence dosimeters (TLDs) are rapidly gaining popularity in *personnel radiation dosimetry* because they are fairly sensitive to neutron and gamma rays. The objective of this research project is to find a single TLD for assessing neutron and gamma ray contributions simultaneously in *personnel monitoring*. The TL-phosphors to be used in this study are as follows: LiF (TLD-100, 600 and 700), CaF<sub>2</sub>:Dy (TLD-200), CaF<sub>2</sub>:Tm (TLD-300), CaF<sub>2</sub>:Mn (TLD-400), CaSO<sub>4</sub>:Dy (TLD-900), LiF:Ti:Mg (self-made), and CaSO<sub>4</sub>:Dy (self-made).

*calcium fluorides;* *calcium sulfates;* *dysprosium;* *gamma radiation;* *lithium fluorides;* *magnesium;* *manganese;* *neutrons;* *occupational exposure;* *personnel dosimetry;* *radiation doses;* *radiation hazards;* *thermoluminescent dosimetry;* *thulium.*

**OCCUPATIONAL EXPOSURE:** *personnel dosimetry,* *thermoluminescent dosimetry.*

## Brazil

**IPEN-DOC- 6039**

**BR9400001** Establishment of a diagnostic radiology procedure for instruments calibration.

*Topic codes:* I; II.

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*Sponsoring Organization(s):* Comissao Nacional de Energia Nuclear - San Paulo (San Paulo, Brazil).

*Organization Type:* Foundation or laboratory for research and/or development

*Program Duration:*

From 1993.08

To 1996.12

*Status of Advancement:* Research in progress.

*INIS categories:* C61.00, E40.00

The objective of this work is to install and determine the main characteristics of a diagnostic radiology system in order to establish procedures for calibration of instruments. This project includes the set-up of the system, total filtration determination, exposure reproducibility test, current linearity test and half-value layers determination.

*calibration;* *diagnosis;* *equipment;* *performance testing;* *radiology.*

**RADIOLOGY:** *equipment.*

**BR9400002 Interpretation of the TLD-environmental data.**

*Topic codes:* IV.

*Principal Investigator:* Faria, L.O. Centro de Desenvolvimento da Tecnologia Nuclear - CDTN/CNEN.

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*Sponsoring Organization(s):* Centro de Desenvolvimento da Tecnologia Nuclear - CDTN/CNEN.

*Organization Type:* Foundation or laboratory for research and/or development

*Collaborating Organization(s)* Swiss Federal Office of Energy; Nuclear Safety Inspectorate; IAEA Project: Radiation Protection BRA/026.

*Program Duration:*

From 1987.07.01

To 1993.12.31

*Status of Advancement:* Research in progress.

*References of recent publications in the same field issued from this laboratory:*

Faria L.O.: Interpretation of TLD-Environmental data to some Brazilian Radioactive facilities, paper to be presented at II Congresso Regional de Seguridad Nuclear, Zacatecas, Mexico, Nov. 1993; Faria L.O.: Interpretation of TLD-Environmental data to some radioactive facilities, to be published at the Radiation Protection Dosimetry.

*INIS categories:* E41.10

Thermoluminescence dosimeters (TLD) have been extensively employed for *environmental radiation measurements* in some Brazilian radioactive facilities, due to their known properties such as high sensitivity, low fading, etc. The interpretation of the TLD-environmental data, based on specific methods, can provide significant information about the quality of the background measurements and about the exposure components related and unrelated to the facility operation. The aim of this programme is to develop and optimize interpretation methods of TLD-Environmental data which allows us to check or control, and not to determine, those parameters related to exposure components and to background measurements.

*background radiation;* *data analysis;* *data processing;* *nuclear facilities;* *radiation monitoring;* *thermoluminescent dosimetry.*

**THERMOLUMINESCENT DOSIMETRY:** *data analysis,* *data processing.*

**IPEN-DOC- 6038**

**BR9400003** Chemical solutions and TL detectors for high doses. ✓

*Topic codes:* I.

*Principal Investigator:* Caldas, L.V.E. Instituto de Pesquisas Energeticas e Nucleares IPEN-CNEN/SP, Caixa Postal 11049, CEP 05422-970 San Paulo, SP Brazil.