

**NAM S&T WORKSHOP ON GAMMA RADIATION PROCESSING OF  
HEALTHCARE AND FOOD PRODUCTS, BOARD OF RADIATION AND ISOTOPE  
TECHNOLOGY (BRIT), DEPARTMENT OF ATOMIC ENERGY, MUMBAI (INDIA),  
FEBRUARY 4-7, 2002**

**PARTICIPATING COUNTRIES : 8 MEMBER COUNTRIES OF THE NAMS&T CENTRE**

**NUMBER OF PARTICIPANTS : 9**

Gamma radiation processing technology for food and medical products is an important eco-friendly, well-established and industrially viable technology that has been adopted by many developing and developed countries. In the field of food it is being used for strengthening food security, improving food hygiene and overcoming quarantine barriers in international trade. Due to harmful effects of fumigation, which has also been banned in many countries, the exporting countries are also required to adapt to the new and stringent regulations of the importing countries for their products. In the field of medical products it is increasingly being used for sterilization of a variety of medical products, pharmaceuticals and raw materials.

Application of radioisotopes and radiation in healthcare products has been in use in India since setting up of the gamma radiation sterilization plant of healthcare products in 1974. Following the clearance of radiation processing of spices, onions and potatoes by the Government of India for both domestic consumption and export, a demonstration plant for processing spices was subsequently set up in 2000 and another plant for processing of potatoes and onions is in the process of being set up.

In view of the expertise available in India and in pursuance of the approval of the Bureau of the 9<sup>th</sup> Governing Council at its meeting held in Jakarta in December 2000, the Centre organized a workshop for the member countries of the Centre on Gamma Radiation Processing of Healthcare and Food Products at Bhabha Atomic Research Center (BARC), Trombay, India during February 4-7, 2002, in association with the Board of Radiation and Isotope Technology (BRIT) of the Department of Atomic Energy, Government of India. The workshop was designed to give a good coverage to all the aspects of GRP, namely, design, construction, operation and maintenance of GRP plants; various applications, both services and development; regulatory aspects of both radiological safety and Food and Drugs Administration (FDA) matters; QAIQC and dosimetry; ISO certification procedures for GRP services; HRD needs etc.

The workshop was attended by nine participants from the member countries of the Centre, respectively, Bangladesh (Mr. M Mosharraf Hossain of the Atomic Energy Research Establishment in Dhaka), Egypt (Prof. Dr. Rafaat Mohamed Yousri of the Atomic Energy Authority in Cairo), India (Dr. D. A.

Dhabolkar of the Sriram Institute of Industrial Research, Delhi and Dr. A. Malhotra of All India Institute of Medical Sciences in New Delhi), Indonesia (Dr. Muhamed Natsir of the National Nuclear Energy Agency in Jakarta), Iraq (Dr. Mohammed Zaidan Khalaf of the Department of Entomology, Agricultural and Biological Research Centre in Baghdad), Malaysia (Dr. Muhamad Bin Lebai Juri of the Malaysian Institute for Nuclear Technology Research in Kajang), Nepal (Ms. Laxmi Pradhan of the Department of Food Technology and Quality Control Standardization in Kathmandu) and Vietnam (Mr. Le Huu Hieu of the Post-Harvest Technology Institute in Hanoi).

Dr. S.P. Sukhatme, Chairman of the Atomic Energy Regulatory Board (AERB) of India, inaugurated the workshop. In his address he stated that gamma radiation was a safe, efficient and economic method for processing of healthcare and food products and emphasized that for any ionising radiation, safety of the source and its storage and shielding is of utmost importance requiring regular monitoring. It should also be ensured that the personnel handling the process are properly qualified and trained and proper maintenance and emergency response plans are in place. He dwelt with the work of the Atomic Energy Regulatory Board and stated that all power plants have to undergo pre-commission tests before license is given otherwise penal sanctions are imposed. He was happy that so far the record of nearly a dozen atomic power plants operating in the country has been excellent.

Workshop Director Dr. N. Ramamoorthy, Chief Executive, Board of Radiation and Isotope Technology (BRIT) explained the mandate of the BRIT, which was set up by the Department of Atomic Energy (DAE) of the Government of India in 1989 and which includes promotion of private enterprises in the country for Gamma radiation processing of various products and its quality management. BRIT was technologically self sufficient in setting up gamma radiation processing plants including production and supply of  $\text{Co}^{60}$  and has also set up plants abroad. Apart from irradiation facility, the BARC's Isotope group is engaged in R&D on Radio-pharmaceutical Chemistry using reactor and cyclotron produced radioisotopes for diagnostic and therapeutic applications, which are being supplied to 120 nuclear medicine centres in India.

The workshop was spread over eight technical sessions besides the inaugural session, in-plant training and practicals at BRIT's ISOMED plant in Trombay, in-plant training and on-job familiarization at BRIT's Spice Plant at Vashi, panel discussion and valedictory function. Plant visits were made for first hand exposure to facilities and procedures. The participants presented country status reports.

The first session included the presentation by Mr. M. Ananthakrishana from BARC, Mumbai on Nuclear Reactions and Isotope Production; by Dr. N. Ramamoorthy, Chief Executive, BRIT on Radiation Processing Technology and its Commercial Applications; and by Mr. D.S. Lavale from BRIT on Radiation

Plant-Design and Application Aspects. The subsequent sessions included presentations by Dr. Lalit Vashney from BARC on Material Compatibility and Quality Assurance in Radiation Processing of Healthcare Products; by Dr. G. Sharma, Deputy General Manager, BRIT on Good Radiation Practices – Process Control and Validation and on Radiation Processing of Spices - An Experience; by Dr. R. M. Bhat from BARC on Low, Medium and High Dose Dosimetry in Radiation Processing; by Mr. R. Zaman from BRIT on Plant Commissioning and Routine Product Dosimetry; by Dr. Arun Sharma from BARC on Radiation Preservation of Food Products and on Radiation Plant for Processing of Onion and Potato; by Dr. A. N. Nandakumar from AERB on Licensing Requirements for Setting up and Operating a Radiation Processing Facility in India and on Radiation Safety and its relevance to Radiation Processing Facilities; by Mr. H.D. Salunke, Joint Commissioner, Food and Drug Administration, Maharashtra State on Legislation and Licensing Aspects on Irradiation of Food; by Dr. D.A. Dhabolkar, Sr. Advisor, Shriram Institute for Industrial Research, New Delhi on Radiation Processing of Healthcare Products - an Update; by Mr. A. C. Dey from BRIT on Plant Servicing and its Maintenance; by Mr. K. T. Ramakrishnan, Managing Director, Registro Italiano Navale India Ltd. on ISO Certification - Its Relevance and Requirement; and by Dr. AK. Kohli from BRIT on Economic Considerations for Operating a Radiation Processing facility. Dr. J.P. Mittal, Director, Chemistry and Isotope Group, Bhabha Atomic Research Centre (BARC) chaired the final session on Panel discussion and covered areas of possible bilateral cooperation amongst the member countries.