



EXHIBITION ON BARC TECHNOLOGIES

September 20th, 2014

An exhibition of products developed by Bhabha Atomic Research Centre (BARC) will be organized at PDPM IITDM Jabalpur on September 20, 2014. Exhibition will be open for all. All are invited to visit exhibition which is being organised first time in this part.

The exhibits will include Poster Gallery, Interactive models, LCD displays, information kiosks and AV presentations depicting applications of atomic energy.

Poster Gallery

The poster gallery covers a variety of domains like Agriculture, Food Preservation, and Land Utilization, Health and Bio-medical Instrumentation, Desalination, Drinking Water, Rural Empowerment, Industrial Application, Electricity Generation and National Security.

Interactive Models

Exhibition will showcase interactive models and exhibits to let the students and visitors have a first hand experience of technology to cover a spectrum of BARC projects in the areas of science, technology and societal initiatives.

Information KIOSK and AV Presentations

The students and visitors mostly show keen interest in browsing the contents rolled out on touch-screen information KIOSK. Interested visitors can make themselves aware of BARC's scientific and societal deliveries to the nation by playing presentations on large LCD screens.

Some of the products / technology to be demonstrated are

I. Agriculture Sector

KRUSHAK irradiator is a specially designed technology demonstration unit, primarily for controlling sprouting in stored onions. Radiation processing brings benefits to consumers in terms of availability, storage life, distribution, and improved hygiene of food having stabilizing effect on market price of commodities by reducing storage losses.

Sample Seeds of Crop varieties (41) are developed by Nuclear Agriculture and Biotechnology Division, BARC using radiation induced mutation and cross-breeding. The BARC had developed 15 varieties of groundnut, eight of mung bean, five of urad bean, four of tur, three of mustard, two of soyabean and one each of chavali, sunflower, rice and jute. These 41 varieties of different crops are developed by BARC's Nuclear Agriculture and Biotechnology Division at Trombay in collaboration with some of the agriculture universities.

Samples of Radiation Processed Vegetables, Cereals, Spices are also developed. A significant amount of agricultural produce is lost due to insect infestation, microbial attack and other biological and physical damages during postharvest handling and storage. Radiation processing is a physical process in which food and agricultural commodities are exposed to controlled doses of radiant energy to achieve desirable effects such as inhibition of sprouting, ripening and destroying insect pests, parasites, pathogenic and spoilage bacteria.



II. Medical / Health Sector

Bhabhatron, a teletherapy machine indigenously developed by BARC, delivers radiation therapy for the treatment of cancer patients. This low-cost machine makes the treatment affordable and accessible to the patients, particularly from rural areas.

Hydrogel is a dressing which is ready to use, sterile, cooling, mechanically strong, non-adherent and contour forming. It reduces depth of burning by cooling the wound when applied immediately after the burn. The application and removal of dressing is painless. It is effective in difficult to heal wounds like leprosy, diabetic foot ulcers, pressure ulcers, etc. Further, it prevents scar formation and is very useful on donor areas in plastic surgery. Recently, it has been observed to be useful in treating animal bites. Burn injuries from firework, chemical, petrol, electrical appliances, road accidents can be treated using hydrogel. The hydrogel contains about 90% water, yet has capacity to absorb more water, almost equal to its weight. It is not medicated and does not contain any extraneous, synthetic chemicals which could leach out into the wound and interfere with natural wound healing process.

Nuclear Medicines make use of radiation emitted by radioisotopes. Detecting these emissions and transforming them into images is the basis of nuclear medicines. Several radiopharmaceuticals have been developed that are tagged with radioisotopes for diagnostic or therapeutic purposes which are injected into the patient's body. Radiopharmaceuticals injected into a patient produce a signal which can be seen using a gamma camera. It is possible to show both organ function and the development of the disease within it. Nuclear medicine is used for controlling or eliminating cancerous growths formed by rapidly dividing cells.

Radiation Sterilized Medical Products: Sterilization of medical and healthcare products using gamma radiation is now a well-established and efficient technology. ISOMED was set up by the Department of Atomic Energy to provide gamma sterilization services to the manufacturers of healthcare products in the country. A wide range of healthcare products sterilized at ISOMED will be displayed.

Water Purifier: BARC has developed and demonstrated several types of thermal and membrane based desalination and water purification technologies. Few sets of water purifiers developed by BARC will be displayed in the exhibition.

III. Technical Sector

Master-Slave Manipulator is the most widely used general-purpose remote handling tools in nuclear industry. An MSM consist of two arms: the master arm and the slave arm. The slave arm is placed in the hostile area (hotcell) and the master arm in a safe area (operating area). It is used in remote handling of radioactive materials in hotcells of DAE units. Extended Reach Master Slave Manipulator (ERM) has 6 independently controlled joints (6 DOF) for arbitrary positioning and orienting the object.

Indian Environmental Radiation Monitoring Network (IERMON) is a countrywide environmental radiation/radioactivity monitoring network for the assessment of natural and fallout radioactivity. It is a solar powered system for online monitoring of environmental radiation with multiple detectors which uses Multiple GM tube detectors. Online data communication using GSM based and direct LAN based communication has been incorporated. It is a part of the ongoing program of country-wide deployment of radiation monitoring network.

Radiation Protection Gear for workers working in radiation is the clothing or equipment worn by workers to prevent or mitigate serious job-related illness or injury.

Dip N Drink Membrane Pouch provides a sterile drinkable solution from biologically contaminated water, especially during disaster conditions like flood, cyclones, tsunami and earthquakes. It can also be used in Oral Rehydration Therapy in remote areas and villages.