FOOD RADIOACTIVITY CONTAMINATION MONITORING SYSTEM (FRCMS)

Radioactivity in excess from its natural level in the environment can have harmful effects on living being. Food chain is the most important route through which a person gets contaminated internally form radioactivity and exposed from harmful radiations. International Atomic Energy Agency (IAEA) has stipulated isotope specific radioactivity limit for general consumption of various food items for controlling the internal exposure during nuclear / radiological emergencies. Quick radioactivity assessment in food stuffs and drinks is thus the utmost requirement for managing personnel / public radiation exposure.

Defence Laboratory, Jodhpur has developed a "Food Radioactivity Contamination Monitoring System (FRCMS)" as shown in Fig.1, for measuring the radioactivity concentration in edible items. It is an indigenous development "First of its kind" in India, which accommodates raw food samples and drinks for radioactivity measurement. It generates visual warning (Green, Yellow & Red) based on radioactivity level. It indentifies the radioisotope/s and computes gross as well as isotope/s activity and generates sample contamination analysis report. The system is primarily developed for armed forces, however will be equally useful to NDRF, VIP security forces and custom departments. FRCMS can also be used for civilian / research applications during peace time natural radioactivity measurement in variety of samples.

Fig 1: Food Radioactivity Contamination Monitoring System (FRCMS)

Salient Features / Specifications

- *Portable & Dismountable*
- *Gross Weight: ~125 kg*
- *Power: AC mains (220 V, 50 Hz) or 12V battery*
- *1 hour battery backup*
- *Detector: NaI(Tl) Scintillator (3" x 3")*
- *MCA: 1k channel USB based*
- *Integrated Control Unit*
- *Sample Containers (100, 500 & 1000 ml)*
- *Activity Measurement Range: 50 – 10^6 Bq/kg*
- *Energy Detection Range: 50 keV – 1.5 MeV*
- *Operating temperature: 0 - 50 ^{0}C*

Current Status: Finished Product (01 no) is available at DL Jodhpur. The system is being demonstrated to the services and currently deployed at SSS Navy for radioactivity measurement.