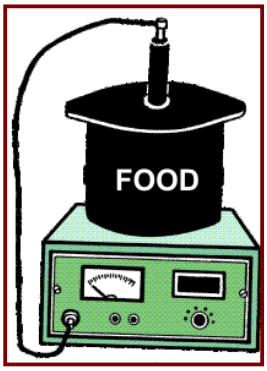
FOOD RADIOACTIVITY CONTAMINATION MONITOR PFC-3

SALIENT FEATURES

● Low cost ● Easy to find the presence of gamma radioactivity ● Easy to judge the extent of contamination ● Built in 250 channel automatic SCA ● Data storage and printing ● Isotope identification possible either manually or by taking aid of PC.



INTRODUCTION

PLA's Food Radioactivity contamination Monitor is a low cost Food Contamination Monitor that fits double or triple number of setups in the same budget. It finds the presence of Gamma radioactivity in food and generates the spectrum data with which it is possible to identify the isotopes that have caused the contamination. Method of use is also simple.

Step 1 is to check presence and extent of radio activity in gross counting mode more the counts, higher is the contamination. If radioactivity is absent, then there is no need to go to step 2

Step 2 is to generate the 250 channel spectrum data using it's automatic SCA in window mode. This data will get automatically stored in the electronic instrument memory 25 such spectrum datas can be stored. Using the recall menu, one can than identify the main channels which have higher counts. Then using the table given in the manual, user can identify the type of isotope . For convenience, this data, can also be printed on dotmatrix printer by using print facility of "Dump" menu.

Step 3 is needed only if a spectrum is to be plotted. This involves transferring the data by using Dump facility in block menu to the PC. Data is to be captured by generally available Hyper terminal software of PC which is in CSV format. This captured data can then be pasted in excel file and graph of spectrum can be plotted.

This Food Monitor consists of two parts.

1) Gamma Ray Spectrometer with automatic SCA and data storage.
2) NaI Scintillation probe
3) 500ml container with 1 inch thick lead shielding

Note : PC is optional at an extra cost.

TECHNICAL SPECIFICATIONS

Electronic instrument of this Food Monitor consists of single channel analyser with automatically shifting base line. Thus it can be used as 250 channel analyser and it has built-in counting system. For spectral analysis of gamma radiation emitted by radioisotopes, base line is shifted automatically after every reading, whereas window is to be set manually. From the readings stored, the spectrum can be plotted either

manually or by transferring data to the PC. Information about the identity & purity of isotopes, their relative abundance & the effects of scattering & absorption can be obtained. This unit is to be used with NaI scintillator probe.

Radiation Detected	: γ (Gamma)
Detector (optional)	: NaI(Tl) Scintillation with photomultiplier
Display	: 16 x 2 Character LCD (_ 10 mm character height)
AMPLIFIER	
Input	: Pulses from Scintillation probe
Input Impedance	: > 1kΩ
Gain	: Max. 100, adjustable with 10 turn potentiometer with turns indicating dial
Time Constant	: **Differentiation:** 1μsec **Integration:** 1μsec
ANALYZER	
Operating Modes	: Window Mode or Integral Mode, selectable
Base Line	: 80mV to 10 Volts, automatically / manually adjustable in steps of 40mV
Window Width	: To be selected manually by 10 Turn dial in steps of 40mV
EHT	: Output available on EHT marked connector provided on rear panel
Output Voltage	: 0 to 1250 Volts, adjustable
Output Current	: 200 μA max.
LV Output	: $\pm$ 15 Volts DC / 100mA o/p available on rear panel (9 pin 'D' socket) (for pre-amplifier of scintillation probe)
User Interface	: Menu driven with START/STOP, CLEAR, UP, RIGHT, ENTER buttons
Preset Time Mode	: 6 Digit Counter, 999999 counts 3 Digit Timer, 1 to 999 seconds / minutes
Recall Menu	: Recalls the Data saved of counts along with time & Serial Number
Block Menu	: Readings of counts along with time & serial number can be printed, Dumped (on PC via serial port) or deleted with FROM & TO range
Data Storage	: Stores 25 samples in WINDOW mode / 400 readings in INTEGRAL mode : Counts, Monitoring Time & Serial number
Serial Port	: RS232 (RS485 optional) Data dumping to PC from block menu
Printer Port (optional)	: For printing on Centronics (SPP) compatible printers
Power Supply	: 230V $\pm$ 10%, 50Hz Mains

SCINTILLATION DETECTOR

Scintillation Detector comprising of NaI Solid 2 X 2 (Dia.) with 500 ml container

CAT. No. PFC-3/0412

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