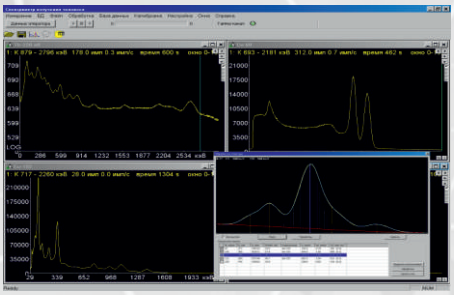
AT1316A Whole Body Counter



^{60}Co and other radionuclides measurement in human body

AT1316A Whole Body Counter (WBC) is designed for express-monitoring and measuring of gamma-emitting radionuclides in human lungs ("Sitting straight" geometry).

Operating principle

WBC operating principle is based on detection of incorporated gamma-emitting radionuclides activity in human lungs with spectrometric detection unit and processing of spectrometer measurement information with hardware-software instruments to define radiometric characteristic of internal contamination considering anthropometric characteristic of target person.

Measurement of a Person

Joined version of AT1322 and AT1316/AT1316A

Applications

Citizens and staff individual dosimetric monitoring of internal exposure:

- Citizens and staff monitoring during and after radiation accidents
- Factory and office workers monitoring, involved into radioactive material production or use
- Nuclear Power Plant staff monitoring

Features

- Stabilized spectrometric path
- Spectrometric and radiometric measurement modes
- Control of gross activity threshold exceeding for ^{51}Cr, ^{54}Mn, ^{58}Co, ^{59}Fe, ^{65}Zn, ^{95}Nb, ^{100m}Ag, ^{103}Ru, ^{124}Sb, ^{141}Ce, ^{144}Ce radionuclides in lungs
- Efficient and highly sensitive algorithm for instrument spectra processing utilizing matrix method for activity estimation
- Radionuclide identification in spectrometric mode
- Flexible software control of spectrometer functions, generation of database and report based on measurement results
- Fixed chair geometry
- Compact design
- Prompt accommodation to background conditions using operational background generating option
- Can be installed into a van as part of mobile radiation monitoring laboratory
- USB Counter-to-PC connection

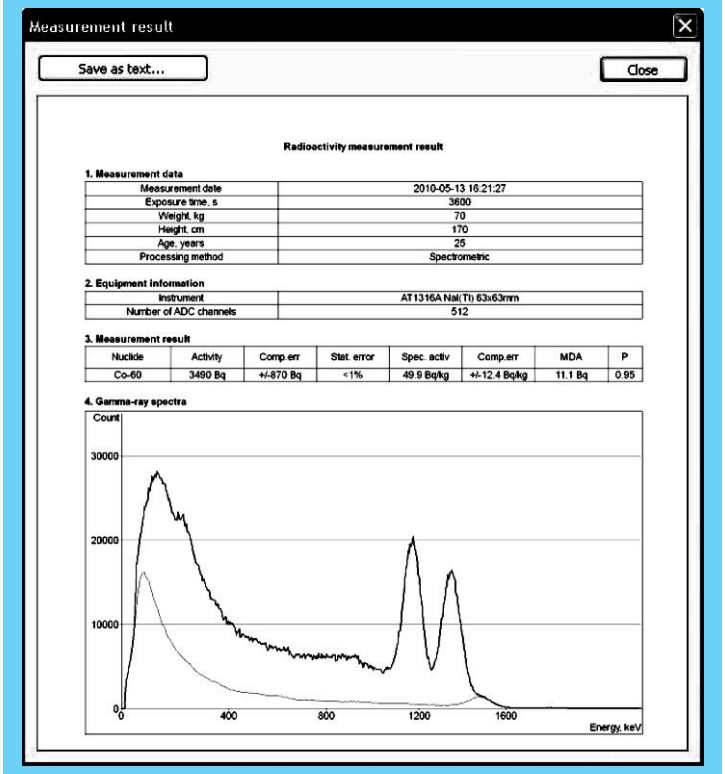
AT1316A Whole Body Counter

Specification

Detector type	Scintillator, NaI(Tl) Ø150x100 mm
Registered gamma radiation energy range	50 keV – 2 MeV
Minimum measured activity of ^{60}Co in adult human lungs for 3 min. measurement interval	60 Bq
^{60}Co radionuclide activity measurement range in adult human lungs	40 – $1 \cdot 10^5$ Bq
Measurement geometry	"Sitting straight"
Limits of tolerable intrinsic relative error	±20%
Number of ADC channels	512
Integral nonlinearity	±1% max.
Typical resolution at 662 keV (^{137}Cs)	9%
Measurement instability during continuous service	±3% max.
Express-monitoring productivity	15 person/h
Operation mode setup time	10 min
Continuous run time	24 h
Working temperature range	+10°C to +35°C
Relative air humidity with air temperature ≤30°C without condensation	≤75%
Power supply	110-230 VAC, 50-60 Hz
Power consumption	≤200 VA
Weight	250 kg

Design and specifications are subject to change without notice

Measurement result display



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