

SpectraDec software for liquid scintillation analysis

FEATURES

- Software allows users to provide radionuclide analysis of samples measured on all types of liquid scintillation spectrometers
- rapid processing in the automatic mode of spectra with small statistics, with poor resolution and with a significant overlap in the energy spectra of constituent radionuclides
- the processing is based on mathematical modeling of the measured spectrum by the spectra of individual radionuclides from a pre-prepared library
- the possibility of modeling the missing library spectra from the available spectra
- availability of the measurement techniques used on liquid scintillation spectrometers
- rapid test (without radiochemical preparation) of the activity of α - and β -emitters
- procedure of the automatic and manual quenching correction, including the application of an external standard
- accounting for activity of radionuclide used as a label
- possibility of self-modeling of the spectrum by the operator, as well as taking into account of a priori activity of radionuclides in the mixture
- formation of preliminary sets of the calculated radionuclides
- the report editor allows you to create the resulting document in accordance with any user requirements and save it in various formats (html, pdf)
- availability of the user and administrator modes

PROTOCOL

of spectrum processing
from 14.03.2017

Instrument: «TRI CARB 2550»

Spectr: D:_vs12\SD\SpD\Spectra\Sample 7_3 Water screening.001

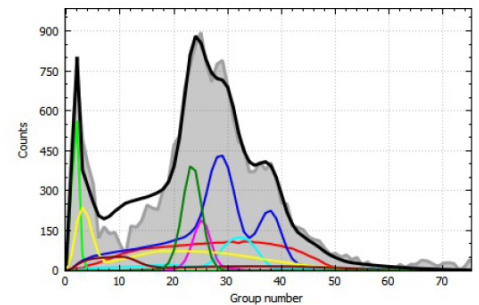
Measuring date: 14.03.2017 10:05

Measuring time: 36000 sec

Sample mass (volume): 20g(ml)

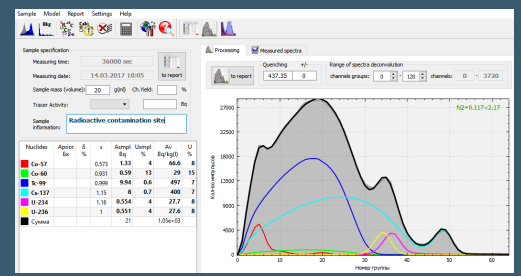
Sample information: Sample 7_3 Water screening

Nuclides	Cont. %	Asmpl. Bq	U, %	Av. Bq/kg(l)	U, %
K-40	19	0.11	13	5.6	15
Lum	5.1	0.027	26	1.3	27
Rn-222eq	33	0.0349	7	1.75	1e+01
Ra-224Eq	8	0.043	25	2.1	26
Ra-226	4.4	0.022	34	1.1	35
Ra-228+Ac-228	16	0.085	18	4.2	19
Th234+Pa234m_Eq	5.8	0.017	52	0.86	52
U-238	9.5	0.05	14	2.5	16
Total	100.7	0.391		19.5	



SpectraDec

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APPLICATION

- Monitoring of natural radionuclides (^{226}Ra , ^{228}Ra , ^{228}Th , ^{222}Rn , ^{210}Pb , ^{210}Po , ^{234}U , ^{238}U) and technogenic (^3H , ^{14}C , ^{90}Sr , ^{89}Sr , ^{137}Cs , ^{241}Pu , ^{36}Cl , ^{129}I , ^{85}Kr , ^{99}Tc , Pu) radionuclides in environmental objects (air, soil, water, sediments, foliage, etc.) at background levels
- Rapid analysis of various radionuclides in the environment under the control of emissions and discharges of non-nuclear-cycle enterprises (coal, oil and gas fields, power plants)
- Monitoring of technogenic radionuclides in emissions and discharges of enterprises of the nuclear cycle (^3H , ^{85}Kr , ^{89}Sr , ^{90}Sr , ^{99}Tc , ^{129}I , ^{241}Pu ...), as well as in radioactive waste
- Radiation monitoring of sources of drinking water supply and food products
- Monitoring of the content of various radionuclides in technological environments at nuclear cycle plants – rapid analysis by screening method without radiochemical preparation or with minimal simplified preparation
- Measurements of airborne content, as well as internal contents of various radionuclides of personnel at nuclear cycle facilities
- Determination of gross α - β activity in various objects
- Precise analysis of radon and thoron in indoor air
- Quality inspection of isotope products
- Control of radioisotope tracers in medical and biological research

Select nuclides for spectrum processing

Nuclides	Selected	Nuclides sets
SDElem.biz	H-3	Sr-assay
H-3	C-14	Ra-assay
C-14	Co-57	Water screening
K-40	Co-60	FeNi
Fe-55	Tc-99	Sample5
Co-57	Cs-137	Sample6
Co-60	U-234	All
Ni-63	U-236	LRW_H3+
Lum-70%		Beta
Sr-85		
Sr-89		
Sr-90		
Y-90		
Sr-90Eq		
Tc-99		
Cs-137		
Rn-222eq		
Ra-224Eq		

Buttons: Select from list, Add to list, Remove from list, Clear, OK, Cancel

PROTOCOL of spectrum processing from 23.04.2018

Instrument: LSC Tricarb
Spectrum: D:\SD\5441.M2\SpD4TricarbDemo\Spectra\Samples5 Polution.001
Measuring date: 23.04.2018 14:27
Measuring time: 36000 sec
Tyjuseus: 430
Sample mass (volume): 2g(ml)
Sample information: Samples5 Polution.001

Nuclides	Cont. %	Asmpl.Bq	Usmpl.%	Av.Bq/kg(l)	U.%
H-3	0.27	0.15	50	73	51
C-14	<0.089	<0.089	<44	<44	<44
Co-57	3.5	1.37	5	684	9
Co-60	6.1	1.45	6	724	10
Tc-99	42	9.34	2.4	4.67e+03	9
Cs-137	42	8.04	2.4	4.02e+03	9
U-234	2.9	0.561	5	281	9
U-236	2.5	0.551	5	276	1e+01
Total	100	21.5		1.07e+04	



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