DISTRUBUTION OF RADIONUCLIDES IN YEVLAKH REGION AREA

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ABSTRACT

In suggested article has realized first investigate distribution of radionuclides in Yevlakh region area. Quantity of radionuclides (Ra - 226, Ra-228, K - 40, Co - 60, Cs - 134, Cs - 137) in soil and water samples determined by qamma-spectrometric methods. Activity Rn-222 in water samples learned by RAD -7 detector (0.16÷1.3Bk/l). Observing of Cs-137 (3.12 Bk/kq) in soil sample has been taken from Aran settlement area be explained a resualt of global settl process.

1. INTRODUCTION

Activity of rock, process increasing alkalify of soil by ground water sorbsion of radionuclides in soil and other factors impact to the especial activity of natural radionuclids in soil. Energies of γ – rays which permit natural radionuclids not below 2,6 MeV and is partial swallowed by soil. The basic radiating part by a terrestrial surface gives radionuclids which are in thicker 30 sm of ground.

In several zones of Azerbaijan (especially in central Aran regions) geological, ecological process that happen in environment and ground waters rise to the surface and in result of controlles irrigation in agriculture in result of this mineral composition changes upper surface layer and therefore condition appear for of the appearance radionuclids in solution situation which situated in upper surface and mixing with surface water. Analyzes of radionuclide composition ground water allowed to get information about environmental pollution in such areas.

First of all the aim of this work is to determine the quantity of radionuclids and theirs distribution in the area Yevlakh region which is chosen for investigation. Running of Kur river throw Yevlakh region which basis provider water in Azerbaijan republic makes important to learn the problem.

2. MATERIALS AND METHODS

Samples have taken from different places of settlement and villages which border other regions generally 26 (water and soil) and have prepared for the analysis on standard methods. Samples of ground have dried up, have cleared and homogenized. Then the sample of ground have sifted through a sieve and have put in marinelly. For creation of radioactive balance the samples of ground in marinelly were stored one month. Measurement learned by very sensitive gamma - spectrometer and detector RAD-7. Spectrum of samples removed within 4 hours by gamma – spectrometer.

In investigation area some samples have taken from drinking and agricultural waters. This samples have taken from artizan and subartizan water in Yevlakh region area and from High Garabag and High Shirvan canneles which takes sorce from Mingecevir lake and Kur and Alican river wich run in Yevlakh region area. Nowadays 5 samples have taken from artizans and subartizans which are situated in different deepness in Yevlakh region area and have analysed. Artizan water use for drinking, but subartizan waters use either for drinking or in agricaltural.

3. RESULTS AND DISCUSSION

Resualts of radionuclid analyzis of artizan and subartizan water, ground and soil samples which taken from investigation earas was shown in table 1,2 and 3.

Table 1.

Places of taken artizan and subartizan water sample	^{226}Ra *(Bk/l)*	^{40}K *(Bk/l)*	^{60}Co *(Bk/l)*	^{134}Cs *(Bk/l)*	^{137}Cs *(Bk/l)*	^{222}Rn *(Bk/l)*	^{232}Th *(Bk/l)*
Yevlakh city	<1,12	<9,28	<0,43	<0,53	<0,45	0,16	<0,98
Kovher village	<1,03	<8,89	<0,43	<0,47	<0,46	0,81	<0,96
Kovher village	<1,03	9,62±2,9	<0,44	<0,47	<0,49	1,29	<0,93
Aran settlment	1,66±0,2	9,64±3,0	<0,47	<0,57	<0,50	0,65	<1,06
Ashagi Qarkhun village	<1,05	14,7±2,9	<0,44	<0,50	<0,49	1,30	<0,99

The results of analyzes in artisan and subartizan water samples was shown in table 1.

Table 2.

Places of taken ground water sample	^{226}Ra *(Bk/l)*	^{40}K *(Bk/l)*	^{60}Co *(Bk/l)*	^{134}Cs *(Bk/l)*	^{137}Cs *(Bk/l)*	^{232}Th *(Bk/l)*	^{222}Rn *(Bk/l)*
Aran settlment	1,27±0,22	18,5±3,31	<049	<0,53	<0,46	<1,01	0,97
Xaldan village	0,86±0,19	14,56±2,95	<0,48	<0,54	<0,46	<0,97	0,32
Kovher village	<1,06	<0,96	<0,48	<0,53	<0,43	<0,98	0,81
Yevlakh city	<1,01	<9,82	<0,42	<0,47	<0,40	0,96	1,94
Ashagi Qarkhun village	1,21±0,25	15,9±3,34	<0,52	<0,55	<0,54	1,55±026	0,32

The results of analyzes in ground water sample was shown in table 2.

Table 3.

Places of taken soil sample	^{226}Ra *(Bk/kq)*	^{40}K *(Bk/kq)*	^{60}Co *(Bk/kq)*	^{134}Cs *(Bk/kq)*	^{137}Cs *(Bk/kq)*	^{232}Th *(Bk/kq)*
Aran settlment	22,26±2,96	482±51,7	<2,66	<2,99	<2,65	24,9±3,2
Xaldan village	27,38±3,35	7,36±70,81	<3,62	<3,53	<3,21	37,35±3,35
Kovher village	5,61±2,4	261±38,20	<2,28	<2,41	<2,41	<4,83
Yevlakh city	18,11±2,72	433±49,06	<2,51	<2,79	<2,50	20,39±3,02
Ashagi Qarkhun village	15,04±2,75	389±46,75	<2,7	<2,8	<2,59	19,14±2,82

The results of analyzes in soil sample was shown in table 3.

Results of investigation shows irregular distribution of radionuclides in area. In soil sample taken from Aran settlement area observing technical origin Cs-137 (3,12Bk/kq) be explained a result of global settle process.

Typical γ-specters observed in water and soil samples was shown in table 4 and 5.

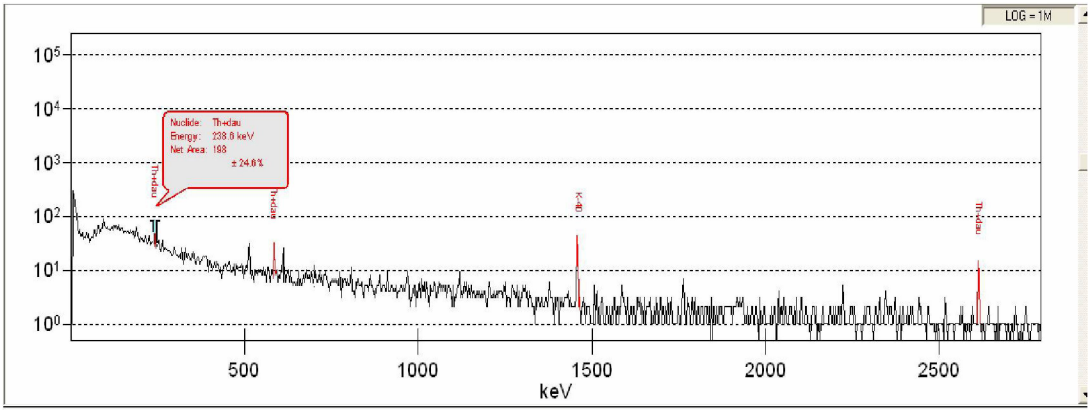


Fig. 4. Typical γ-specter observed in water samples

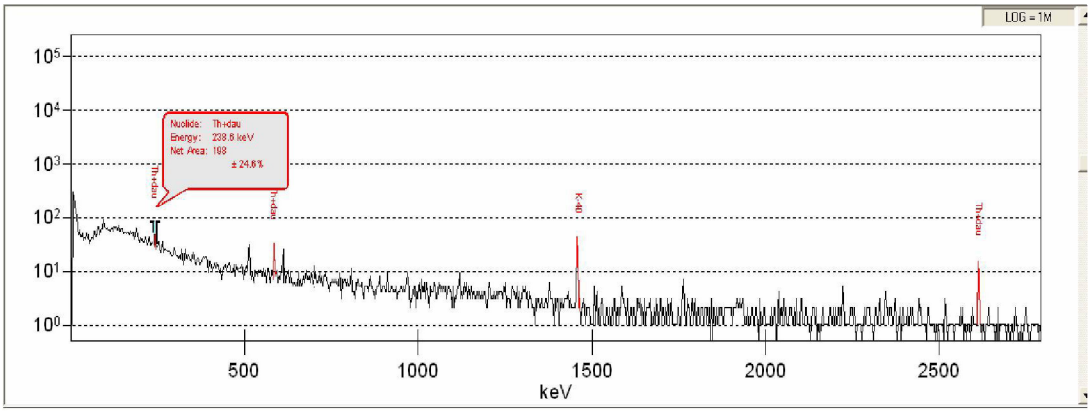


Fig. 5. Typical γ-specter observed in soil samples

4. REFERENCES

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