

**PUE “INSTITUTE OF RADIATION SAFETY “BELRAD”**

APPROVED

Director of PUE “Institute of Radiation  
Safety “Belrad”

\_\_\_\_\_ A.V. Nesterenko

“ \_\_\_\_ ” \_\_\_\_\_ 20\_\_

**SHORT REPORT**

**UNDER THE CONTRACT No. 36 (ATLAS-2) DATED TO JUNE 25, 2008  
(STAGES 23 AND 24)**

Deputy director  
for international cooperation

\_\_\_\_\_ V.I. Babenko

« \_\_\_\_ » \_\_\_\_\_ 20\_\_

**MINSK**

**2010**

According to the Contract No. 36 dated to June 25, 2008 following actions given in the table 1 were performed in framework of the stages 23 and 24.

In Beryoza district of Brest region it was expected to conduct the actions in 3 settlements but at the desire of the regional department for education it was decided to conduct WBC measurements in some more settlements in order to extend the geography of measurements. The results of the work confirmed the assumptions that extremely high values of radionuclide contents are highly unlikely to be found in children of Beryoza district. On May 17, 2010 1002 packings of the pectin preparation VITAPECT was given to the regional department for education for giving it to children from different schools of Beryoza district, having maximal  $^{137}\text{Cs}$  contents.

Table 1 – Data on the number of measurements and the quantity of the preparation VITAPECT given in framework of the stages 23 and 24 to the Contract No. 36.

Settlement	Date	Number of measurements			Quantity of VITAPECT		Notes
		expected	all	children	expected	actual	
Beloozyorsk secondary school No.3 of Beryoza district of Brest region	19-20.01.2010	544	277	261	544	-	
Beryoza secondary school No.2 of Brest region	21.05.2010	-	131	128	-	-	
Bronnaya Gora secondary school and kindergarten of Beryoza district of Brest region	19.05.2010	-	90	84	-	-	
Kabaki secondary school and kindergarten of Beryoza district of Brest region	22.01.2010	204	102	98	204	-	
Liski secondary school and kindergarten of Rechitsa district of Gomel region	17.04.2010	-	55	54	-	-	Control measurement
Mezhdulesye secondary school and kindergarten of Beryoza district of Brest region	20-25.05.2010	-	66	66	-	-	
Pererost secondary school and kindergarten of Dobrush district of Gomel region	10.12.2009	101	101	97	202	-	
	18.02.2010	-	99	73	-	202	Control measurement
	15.04.2010	101	87	85	-	-	
Revyatichi secondary school and kindergarten of Beryoza district of Brest region	21.01.2010	254	127	126	254	-	

Selets secondary school and kindergarten of Beryoza district of Brest region	18.05.2010	-	87	85	-	-	
Beryoza department for education of Brest region	17.05.2010	-	-	-	-	1002	Delivery of VITAPECT
Sivitsa basic school and kindergarten of Volozhin district of Minsk region	08.02.2010	68	71	59	136	-	
	12.02.2010	-	-	-	-	136	
	09.03.2010	68	49	45	-	-	
<b>TOTAL:</b>		<b>1340</b>	<b>1342</b>	<b>1261</b>	<b>1340</b>	<b>1340</b>	

Hereafter there is a statistical data processing.

### BELOOZYORSK, SECONDARY SCHOOL No.3

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	There are no data	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Number of inhabitants	12000 persons	Beryoza executive committee, dated to 01.01.2010
External dose	There are no data	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Internal dose	There are no data	-----«-----
Cumulative dose	There are no data	-----«-----

According to the data dated to January 2010 in the Beloozyorsk secondary school No. 3 there are 961 children, 99 teachers and 41 persons of another staff.

Children from following settlements go to the Beloozyorsk secondary school No.3: Beloozyorsk, Peski and Yartsevichi.

### January 19-20, 2010

The measurement of children in the Beloozyorsk secondary school No. 3 of Beryoza district of Brest region was performed in the school building. A total of measured persons was 277 persons (261 children and 16 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 261): (17.3 ± 0.4) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 30): (27.0 ± 0.3) Bq/kg.

Median value in the whole group: 17.8 Bq/kg.

Median value in the critical group: 27.0 Bq/kg.

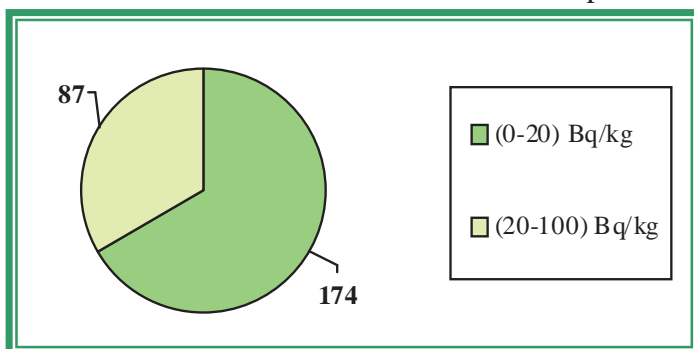
The table 2 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to January 19-20, 2010.

Table 2

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	B.D.V.	SCHOOLBOY	M	40	1997	31.8
2.	K.Ya.N.	SCHOOLGIRL	F	45	1995	31.3
3.	K.A.A.	SCHOOLGIRL	F	42	1997	29.9
4.	V.A.D.	SCHOOLGIRL	F	38	2000	29.3
5.	H.A.Yu.	SCHOOLGIRL	F	43	1997	28.8

6.	B.M.A.	SCHOOLGIRL	F	41	1996	27.7
7.	R.A.Yu.	SCHOOLGIRL	F	26	2000	27.6
8.	O.A.V.	SCHOOLBOY	M	34	2000	27.4
9.	S.A.Yu.	SCHOOLGIRL	F	38	1997	27.4
10.	P.M.V.	SCHOOLGIRL	F	36	2000	27.2
11.	V.V.V.	SCHOOLBOY	M	34	2000	27.2
12.	M.N.A.	SCHOOLGIRL	F	26	2000	27.2
13.	M.I.M.	SCHOOLGIRL	F	43	1994	27.1
14.	S.D.A.	SCHOOLGIRL	F	37	1997	27.0
15.	F.A.O.	SCHOOLBOY	M	37	1997	27.0
16.	V.A.V.	SCHOOLGIRL	F	39	1997	26.9
17.	F.D.V.	SCHOOLGIRL	F	40	1997	26.6
18.	Ya.O.S.	SCHOOLGIRL	F	37	1998	26.6
19.	H.I.Yu.	SCHOOLBOY	M	40	1995	26.3
20.	K.S.A.	SCHOOLBOY	M	27	2001	26.2
21.	M.D.S.	SCHOOLGIRL	F	45	1996	26.2
22.	G.R.I.	SCHOOLBOY	M	43	1997	26.0
23.	N.K.P.	SCHOOLGIRL	F	47	1994	25.7
24.	Sh.A.D.	SCHOOLBOY	M	33	2001	25.7
25.	T.M.G.	SCHOOLGIRL	F	47	1994	25.6
26.	G.S.I.	SCHOOLBOY	M	25	2001	25.5
27.	P.N.N.	SCHOOLGIRL	F	36	1997	25.3
28.	Ya.A.O.	SCHOOLBOY	M	37	1999	25.0
29.	S.A.S.	SCHOOLGIRL	F	50	1996	24.9
30.	H.M.V.	SCHOOLGIRL	F	49	1995	24.8

The figure 1 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Beloozyorsk secondary school No. 3 of Beryoza district of Brest region in accordance with the results of measurements performed from January 19, 2010 to January 20, 2010.



←Figure 1 - Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Beloozyorsk secondary school No. 3 of Beryoza district of Brest region in accordance with the results of measurements performed from January 19, 2010 to January 20, 2010

## BERYOZA, SECONDARY SCHOOL No. 2

Characteristics	Value	Source
$^{137}\text{Cs}$ contamination density of the territory	There are no data	
Number of inhabitants	12000 persons	Beryoza executive committee, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to May 2010 in the Beloozyorsk secondary school No. 2 there are 1378 children, 131 teachers and 32 persons of another staff.

Children from following settlements go to the Beloozyorsk secondary school No.2: Beryoza, Svetoch and Novosyolki.

May 21, 2010

The measurement of children in the Beryoza secondary school No. 2 of Brest region was performed in the school building. A total of measured persons was 131 persons (128 children and 3 adults).

Average  $^{137}\text{Cs}$  specific activity in the whole group (n = 128):  $(22.23 \pm 0.7) \text{ Bq/kg}$ .

Average  $^{137}\text{Cs}$  specific activity in the critical group (n = 30):  $(33.2 \pm 0.6) \text{ Bq/kg}$ .

Median value in the whole group:  $21.7 \text{ Bq/kg}$ .

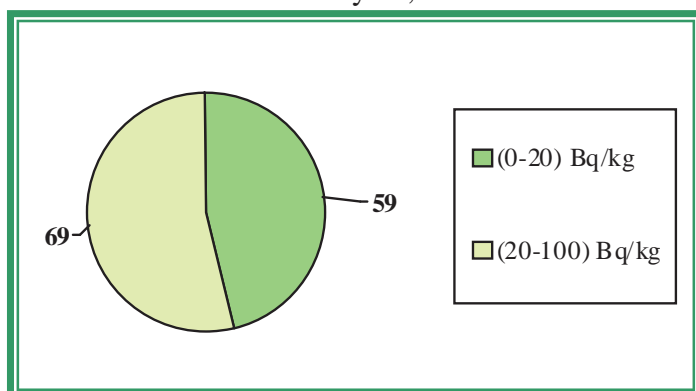
Median value in the critical group:  $33.0 \text{ Bq/kg}$ .

The table 3 demonstrates the maximal levels of  $^{137}\text{Cs}$  specific activity (the critical group) according to the results of measurements dated to May 21, 2010.

Table 3

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	L.M.S.	SCHOOLGIRL	F	31	2000	40.5
2.	F.E.A.	SCHOOLGIRL	F	33	1999	40.1
3.	R.P.V.	SCHOOLGIRL	F	39	1998	38.1
4.	K.E.N.	SCHOOLGIRL	F	38	1998	37.1
5.	S.A.A.	SCHOOLBOY	M	32	1999	37.0
6.	D.O.O.	SCHOOLBOY	M	35	1998	36.5
7.	N.A.V.	SCHOOLGIRL	F	40	1998	36.5
8.	Ch.I.A.	SCHOOLBOY	M	35	2000	36.4
9.	Sh.T.S.	SCHOOLGIRL	F	39	1998	35.5
10.	P.N.V.	SCHOOLGIRL	F	44	1993	35.4
11.	Sh.V.M.	SCHOOLBOY	M	38	1999	35.3
12.	K.A.O.	SCHOOLGIRL	F	29	2000	34.3
13.	P.V.S.	SCHOOLBOY	M	44	1998	34.0
14.	M.A.G.	SCHOOLGIRL	F	44	1992	33.6
15.	D.A.V.	SCHOOLBOY	M	36	1998	33.2
16.	K.S.A.	SCHOOLBOY	M	36	1999	32.9
17.	K.Ya.G.	SCHOOLGIRL	F	46	1995	32.3
18.	Sh.I.O.	SCHOOLBOY	M	45	1998	31.7
19.	S.P.D.	SCHOOLBOY	M	29	2000	31.1
20.	H.E.A.	SCHOOLGIRL	F	39	1999	31.0
21.	H.V.M.	SCHOOLGIRL	F	27	2000	31.0
22.	Sh.A.V.	SCHOOLBOY	M	37	1998	30.3
23.	D.K.S.	SCHOOLGIRL	F	40	1995	30.0
24.	P.A.A.	SCHOOLGIRL	F	47	1994	29.5
25.	Ch.K.A.	SCHOOLBOY	M	33	1999	29.3
26.	M.E.O.	SCHOOLGIRL	F	48	1995	29.1
27.	A.M.I.	SCHOOLBOY	M	37	1998	29.0
28.	G.N.I.	SCHOOLGIRL	F	52	1994	28.7
29.	V.A.T.	SCHOOLGIRL	F	48	1994	28.6
30.	Sh.A.S.	SCHOOLGIRL	F	54	1994	28.5

The figure 2 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Beryoza secondary school No. 2 of Brest region in accordance with the results of measurements dated to May 21, 2010.



←Figure 2 – Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Beryoza secondary school No. 2 of Brest region in accordance with the results of measurements dated to May 21, 2010

# BRONNAYA GORA

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	There are no data	
Number of inhabitants	500 persons	Sokolovo village council, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to May 2010 in the Bronnaya Gora secondary school there are 92 children, 21 teachers and 14 persons of another staff; in the kindergarten there are 25 children and 10 persons of another staff.

## May 19, 2010

The measurement of children in the Bronnaya Gora secondary school and kindergarten of Beryozovka district of Brest region was performed in the school building. A total of measured persons was 90 persons (84 children and 6 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 84): (25.9 ± 0.7) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (35.1 ± 0.8) Bq/kg.

Median value in the whole group: 26.0 Bq/kg.

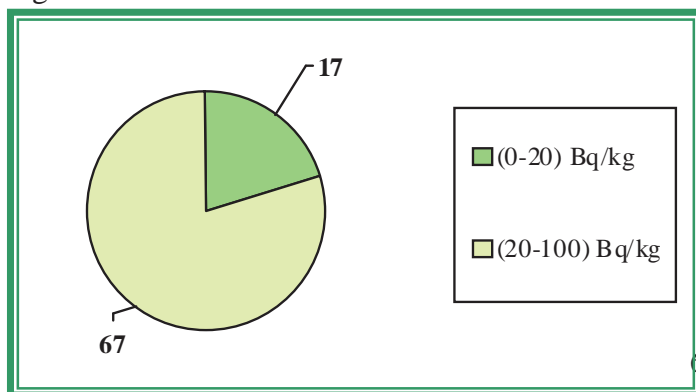
Median value in the critical group: 33.9 Bq/kg.

The table 4 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to May 19, 2010.

Table 4

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	L.E.S.	SCHOOLBOY	M	24	2001	42.6
2.	M.K.P.	SCHOOLBOY	M	37	1997	39.1
3.	V.V.O.	SCHOOLBOY	M	30	2001	38.7
4.	O.E.A.	SCHOOLGIRL	F	27	2000	38.5
5.	L.A.D.	SCHOOLGIRL	F	43	1993	35.2
6.	F.A.I.	SCHOOLGIRL	F	29	2001	35.1
7.	P.A.V.	SCHOOLBOY	M	30	2001	34.8
8.	M.Ya.P.	SCHOOLGIRL	F	46	1995	33.9
9.	J.V.A.	SCHOOLBOY	M	43	1996	33.5
10.	M.A.S.	SCHOOLGIRL	F	50	1994	33.1
11.	O.A.V.	SCHOOLBOY	M	37	2001	32.9
12.	B.P.I.	SCHOOLGIRL	F	43	1994	32.9
13.	L.A.A.	SCHOOLGIRL	F	17	2001	32.9
14.	B.A.N.	SCHOOLBOY	M	36	1996	32.2
15.	L.K.D.	SCHOOLGIRL	F	44	1996	31.8

The figure 3 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Bronnaya Gora secondary school and kindergarten of Beryozovka district of Brest region in accordance with the results of measurements dated to May 19, 2010.



←Figure 3 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in Bronnaya Gora secondary school and kindergarten of Beryozovka district of Brest region in accordance with the results of measurements dated to May 19, 2010

# KABAKI

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	There are no data	
Number of inhabitants	6200 persons	Pervomayskaya village council, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to January 2010 in the Kabaki secondary school there are 110 children, 20 teachers and 8 persons of another staff; in the kindergarten there are 22 children and 13 persons of another staff.

Children from following settlements go to the Kabaki secondary school and kindergarten: Kabaki, Karpeshi and Zhichin.

## January 22, 2010

The measurement of children in the Kabaki secondary school and kindergarten of Beryozovka district of Brest region was performed in the school building. A total of measured persons was 102 persons (98 children and 4 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 98): (17.2 ± 0.5) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (23.9 ± 0.3) Bq/kg.

Median value in the whole group: 17.2 Bq/kg.

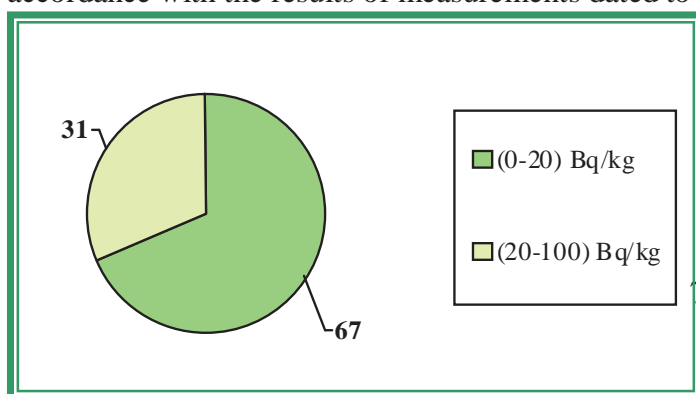
Median value in the critical group: 23.5 Bq/kg.

The table 5 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to January 22, 2010.

Table 5

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	A.A.S.	SCHOOLBOY	M	36	2002	26.3
2.	G.V.V.	SCHOOLGIRL	F	49	1994	26.1
3.	U.V.D.	SCHOOLBOY	M	32	2001	25.3
4.	G.V.A.	SCHOOLGIRL	F	32	2001	24.9
5.	G.A.V.	SCHOOLBOY	M	45	1995	24.6
6.	K.A.D.	SCHOOLBOY	M	28	2003	24.1
7.	K.Ya.N.	SCHOOLGIRL	F	43	1998	23.6
8.	N.N.A.	SCHOOLBOY	M	38	1997	23.5
9.	T.O.A.	SCHOOLBOY	M	43	1999	23.4
10.	K.T.S.	SCHOOLGIRL	F	54	1994	23.4
11.	T.V.A.	SCHOOLGIRL	F	37	2000	23.2
12.	K.V.G.	SCHOOLBOY	M	37	1997	22.9
13.	K.N.V.	SCHOOLBOY	M	45	1997	22.6
14.	V.P.V.	SCHOOLBOY	M	43	1997	22.4
15.	G.A.V.	SCHOOLBOY	M	38	1999	22.2

The figure 4 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Kabaki secondary school and kindergarten of Beryozovka district of Brest region in accordance with the results of measurements dated to January 22, 2010.



←Figure 4 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Kabaki secondary school and kindergarten of Beryozovka district of Brest region in accordance with the results of measurements dated to January 22, 2010

## LISKI

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	2.06 Ci/km <sup>2</sup>	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Number of inhabitants	600 persons	Liski village council, dated to 01.09.2009
External dose	0.25 mSv/a	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Internal dose	0.60 mSv/a	-----<-----
Cumulative dose	0.85 mSv/a	-----<-----

According to the data dated to September 2009 in the Liski secondary school there are 128 children, 19 teachers and 10 persons of another staff; in the kindergarten there are 30 children.

Children from following settlements go to the Liski secondary school and kindergarten: Liski and Krynki.

### April 17, 2010

The measurement of children in the the Liski secondary school and kindergarten of Rechitsa district of Gomel region was performed in the school building. A total of measured persons was 55 persons (54 children and 1 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 54): (26.6 ± 2.2) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (41.5 ± 6.1) Bq/kg.

Median value in the whole group: 24.8 Bq/kg.

Median value in the critical group: 31.7 Bq/kg.

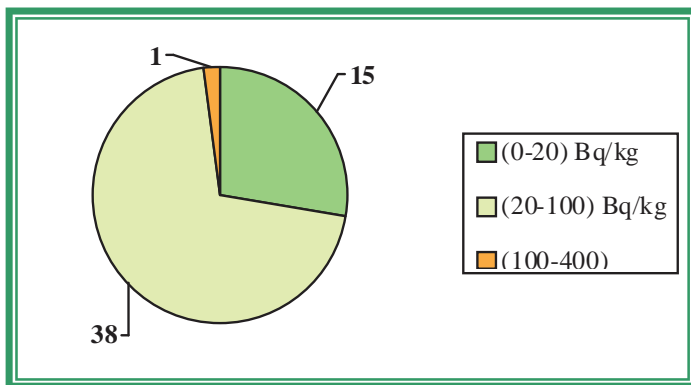
The table 6 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to April 17, 2010.

Table 6

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	S.V.S.	SCHOOLGIRL	F	25	2002	113.4
2.	H.A.S.	SCHOOLBOY	M	69	1993	79.2
3.	H.A.S.	SCHOOLGIRL	F	23	2001	44.4
4.	N.I.O.	SCHOOLBOY	M	35	2000	38.0
5.	P.Ya.A.	SCHOOLBOY	M	25	2003	37.0
6.	G.K.S.	SCHOOLGIRL	F	27	2001	36.0
7.	P.S.S.	SCHOOLGIRL	F	55	1996	31.8
8.	D.M.L.	SCHOOLGIRL	F	49	1992	31.7
9.	L.A.A.	SCHOOLBOY	M	28	2001	31.2
10.	R.M.A.	SCHOOLBOY	M	33	2000	31.0
11.	G.A.G.	SCHOOLGIRL	F	26	2002	30.2
12.	D.M.A.	SCHOOLGIRL	F	34	1999	30.0
13.	A.E.A.	SCHOOLGIRL	F	20	1999	29.8
14.	I.V.A.	SCHOOLBOY	M	48	1995	29.8
15.	P.N.S.	SCHOOLGIRL	F	55	1993	29.7

The figure 5 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Liski secondary school and kindergarten of Rechitsa district of Gomel region in accordance with the results of measurements dated to April 17, 2010.





←Figure 5 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Liski secondary school and kindergarten of Rechitsa district of Gomel region in accordance with the results of measurements dated to April 17, 2010.

## MEZHDULESYE

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	There are no data	
Number of inhabitants	580 persons	Mezhdulesye village council, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to May 2010 in the Mezhdulesye secondary school there are 109 children, 23 teachers and 11 persons of another staff.

Children from following settlements go to the Mezhdulesye secondary school: Mezhdulesye, Kostyuki, Sudilovichi and Stavki.

### May 20, 2010 and May 25, 2010

The measurement of children in the the Mezhdulesye secondary school of Beryoza district of Brest region was performed in the school building. It consisted of two stages: May 20, 2010 and May 25, 2010. A total of measured persons was 66.

Average <sup>137</sup>Cs specific activity in the whole group (n = 66): (23.7 ± 0.9) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (33.7 ± 0.8) Bq/kg.

Median value in the whole group: 23.9 Bq/kg.

Median value in the critical group: 33.3 Bq/kg.

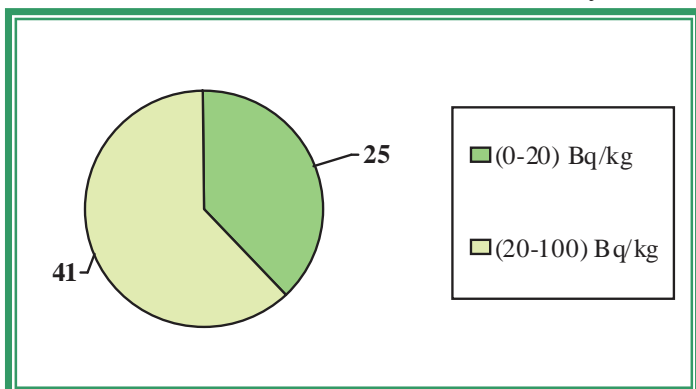
The table 7 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to May 20, 2010 and May 25, 2010.

Table 7

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	A.A.A.	SCHOOLBOY	M	33	1999	40.3
2.	M.S.Yu.	SCHOOLBOY	M	32	1999	38.2
3.	K.A.N.	SCHOOLGIRL	F	35	1998	37.0
4.	P.T.D.	SCHOOLGIRL	F	20	2003	36.5
5.	D.Ya.V.	SCHOOLGIRL	F	40	1998	34.6
6.	D.M.V.	SCHOOLBOY	M	27	2003	34.4
7.	P.O.V.	SCHOOLGIRL	F	31	1998	33.9
8.	K.V.D.	SCHOOLGIRL	F	25	2001	33.3
9.	P.E.P.	SCHOOLGIRL	F	26	2000	32.3
10.	N.K.A.	SCHOOLGIRL	F	31	2002	32.0
11.	I.A.Yu.	SCHOOLBOY	M	21	2003	31.7
12.	G.A.V.	SCHOOLGIRL	F	38	1996	31.6
13.	K.M.G.	SCHOOLBOY	M	45	1999	30.6
14.	T.K.A.	SCHOOLGIRL	F	21	2001	29.6

15.	K.V.D.	SCHOOLGIRL	F	23	2003	29.4
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The figure 6 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Mezhdulesye secondary school of Beryoza district of Brest region in accordance with the results of measurements dated to May 20, 2010 and May 25, 2010..



←Figure 6 - Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Mezhdulesye secondary school of Beryoza district of Brest region in accordance with the results of measurements dated to May 20, 2010 and May 25, 2010.

## PEREROST

Characteristics	Value	Source
$^{137}\text{Cs}$ contamination density of the territory	1.79 Ки/км <sup>2</sup>	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Number of inhabitants	915 persons	Pererost village council, dated to 01.01.2010
External dose	0.21 mSv/a	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Internal dose	0.20 mSv/a	-----<-----
Cumulative dose	0.41 mSv/a	-----<-----

According to the data dated to September 2010 in the Pererost secondary school and kindergarten there are 111 children, 33 teachers and 15 persons of another staff.

Children from following settlements go to the Pererost secondary school and kindergarten: Pererost and Lebedevka.

## December 10, 2009

The first measurement of children in the the Pererost secondary school and kindergarten of Dobrush district of Gomel region was performed in the school building. A total of measured persons was 101 persons (97 children and 4 adults).

Average  $^{137}\text{Cs}$  specific activity in the whole group (n = 97): (24.4 ± 0.7) Bq/kg.

Average  $^{137}\text{Cs}$  specific activity in the critical group (n = 15): (34.9 ± 1.3) Bq/kg.

Median value in the whole group: 23.8 Bq/kg.

Median value in the critical group: 33.3 Bq/kg.

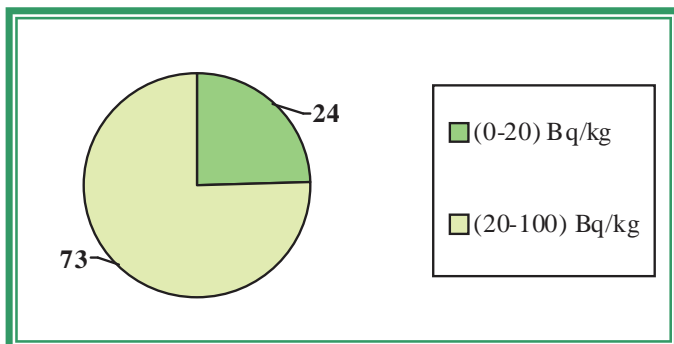
The table 8 demonstrates the maximal levels of  $^{137}\text{Cs}$  specific activity (the critical group) according to the results of measurements dated to December 10, 2009.

Table 8

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	P.I.G.	CHILD PRESCHOOL AGE	M	12	2006	50.6
2.	B.L.V.	SCHOOLGIRL	F	21	2001	38.4
3.	M.A.V.	CHILD PRESCHOOL AGE	F	16	2005	38.4
4.	P.A.S.	SCHOOLBOY	M	22	2002	37.7
5.	Sh.M.A.	CHILD PRESCHOOL AGE	M	17	2005	36.1
6.	V.D.A.	CHILD PRESCHOOL AGE	F	16	2004	33.8
7.	V.V.A.	SCHOOLBOY	M	20	2002	33.5

8.	G.A.M.	SCHOOLGIRL	F	31	2001	33.3
9.	H.M.S.	CHILD PRESCHOOL AGE	M	22	2004	33.0
10.	M.V.V.	CHILD PRESCHOOL AGE	F	12	2005	32.7
11.	G.K.V.	SCHOOLGIRL	F	22	1999	32.6
12.	S.A.A.	CHILD PRESCHOOL AGE	F	12	2007	31.8
13.	K.D.S.	SCHOOLBOY	M	24	2002	31.0
14.	N.Z.M.	SCHOOLGIRL	F	41	1997	30.3
15.	G.A.A.	SCHOOLBOY	M	39	1998	30.2

The figure 7 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to December 10, 2009.



←  
Figure 7 – Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to December 10, 2009

## February 18, 2010

The control measurement of children in the the Pererost secondary school and kindergarten of Dobrush district of Gomel region was performed in the school building. A total of measured persons was 99 persons (73 children and 26 adults).

Average  $^{137}\text{Cs}$  specific activity in the whole group (n = 73):  $(23.0 \pm 1.0)$  Bq/kg.

Average  $^{137}\text{Cs}$  specific activity in the critical group (n = 15):  $(36.8 \pm 1.1)$  Bq/kg.

Median value in the whole group: 22.1 Bq/kg.

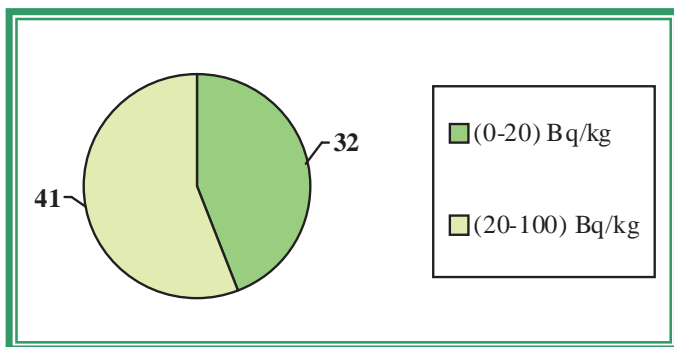
Median value in the critical group: 36.1 Bq/kg.

The table 9 demonstrates the maximal levels of  $^{137}\text{Cs}$  specific activity (the critical group) according to the results of measurements dated to December 10, 2009.

Table 9

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	V.D.A.	CHILD PRESCHOOL AGE	F	16	2004	43.7
2.	V.S.A.	CHILD PRESCHOOL AGE	F	16	2006	43.2
3.	S.A.A.	CHILD PRESCHOOL AGE	F	12	2007	42.6
4.	L.V.E.	CHILD PRESCHOOL AGE	M	20	2004	40.9
5.	A.A.D.	CHILD PRESCHOOL AGE	M	18	2005	40.1
6.	R.T.A.	CHILD PRESCHOOL AGE	F	16	2006	37.7
7.	M.V.V.	CHILD PRESCHOOL AGE	F	14	2005	37.0
8.	B.L.V.	SCHOOLGIRL	F	20	2001	36.1
9.	T.S.A.	CHILD PRESCHOOL AGE	F	22	2004	34.8
10.	M.A.V.	CHILD PRESCHOOL AGE	F	16	2005	34.7
11.	H.M.S.	CHILD PRESCHOOL AGE	M	22	2004	34.7
12.	G.K.V.	SCHOOLGIRL	F	24	1999	33.5
13.	S.A.V.	SCHOOLBOY	M	30	1997	31.6
14.	P.A.A.	CHILD PRESCHOOL AGE	M	17	2004	31.1
15.	Z.T.K.	SCHOOLGIRL	F	27	2000	31.1

The figure 8 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to February 18, 2010.



←Figure 8 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to February 18, 2010

On February 18, 2010 202 packings of the pectin preparation VITAPECT were given for children.

### April 15, 2010

The second measurement of children in the the Pererost secondary school and kindergarten of Dobrush district of Gomel region was performed in the kindergarten building. A total of measured persons was 87 persons (85 children and 2 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 85): (9.5 ± 0.5) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (16.5 ± 0.5) Bq/kg.

Median value in the whole group: 9.8 Bq/kg.

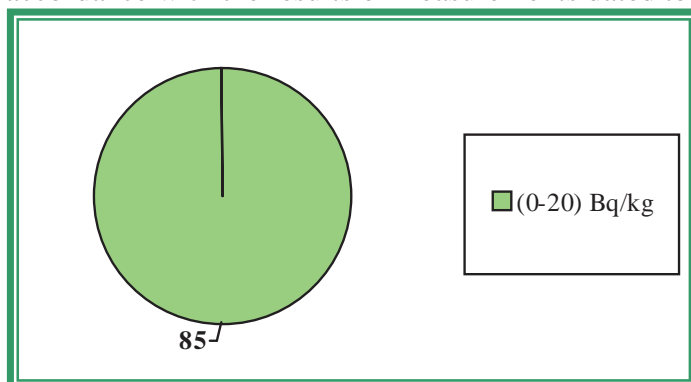
Median value in the critical group: 17.0 Bq/kg.

The table 10 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to April 15, 2010.

Table 10

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	M.V.V.	CHILD PRESCHOOL AGE	F	12	2005	19.6
2.	Ch.V.V.	SCHOOLBOY	M	32	1999	19.2
3.	P.I.G.	CHILD PRESCHOOL AGE	M	12	2006	19.1
4.	B.L.V.	SCHOOLGIRL	F	20	2001	18.3
5.	P.A.A.	SCHOOLGIRL	F	20	2003	17.3
6.	A.G.V.	SCHOOLGIRL	F	66	1993	17.1
7.	V.S.A.	CHILD PRESCHOOL AGE	F	17	2004	17.0
8.	A.G.A.	SCHOOLBOY	M	60	1993	17.0
9.	A.G.A.	SCHOOLGIRL	F	60	1994	16.5
10.	V.E.A.	SCHOOLBOY	M	23	2001	15.3
11.	R.K.A.	SCHOOLGIRL	F	66	1993	15.3
12.	L.V.E.	CHILD PRESCHOOL AGE	M	20	2004	14.4
13.	P.V.A.	SCHOOLBOY	M	38	1999	14.3
14.	B.A.V.	SCHOOLGIRL	F	24	2002	13.6
15.	K.V.N.	SCHOOLBOY	M	48	1996	13.1

The figure 9 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to April 15, 2010



←Figure 9 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to April 15, 2010

To demonstrate the efficiency of the effects of pectin preparations there are comparative data on interval distribution of the specific activity of  $^{137}\text{Cs}$  in children having taken VITAPECT and having passed two WBC measurements (on December 10, 2009 and April 15, 2010). This group consists of 74 children.

**December 10, 2009**

**April 15, 2010**

The first measurement of children in the the Pererost secondary school and kindergarten of Dobrush district of Gomel region was performed in the school building. A total of measured persons was 101 persons (97 children and 4 adults).

The second measurement of children in the the Pererost secondary school and kindergarten of Dobrush district of Gomel region was performed in the kindergarten building. A total of measured persons was 87 persons (85 children and 2 adults).

The data of statistical processing of the results of measurements of the group of children having passed two WBC measurements and having taken VITAPECT-T (74 children).

Average specific activity of  $^{137}\text{Cs}$ :

after the first measurement:  $(23.7 \pm 0.8)$  Bq/kg,

after the second measurement:  $(9.6 \pm 0.5)$  Bq/kg.

Decrease of average specific activity of  $^{137}\text{Cs}$  was 60%.

Increase of specific activity: in 1% children.

The same level of specific activity: in 1% children.

Reduction of specific activity: in 98% children.

The evaluation of the scientific significance according to T-Student criterion ( $n = 74$ ):  $t=20.44$ . The received criterion  $t > 1.96$ ;  $p < 0.01$ .

Median value after the first measurement: 23.6 Bq/kg.

Median value after the second measurement: 9.7 Bq/kg.

Decrease of median value of specific activity of  $^{137}\text{Cs}$  was 59%

The figure 11 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to December 10, 2009 and April 15, 2010.

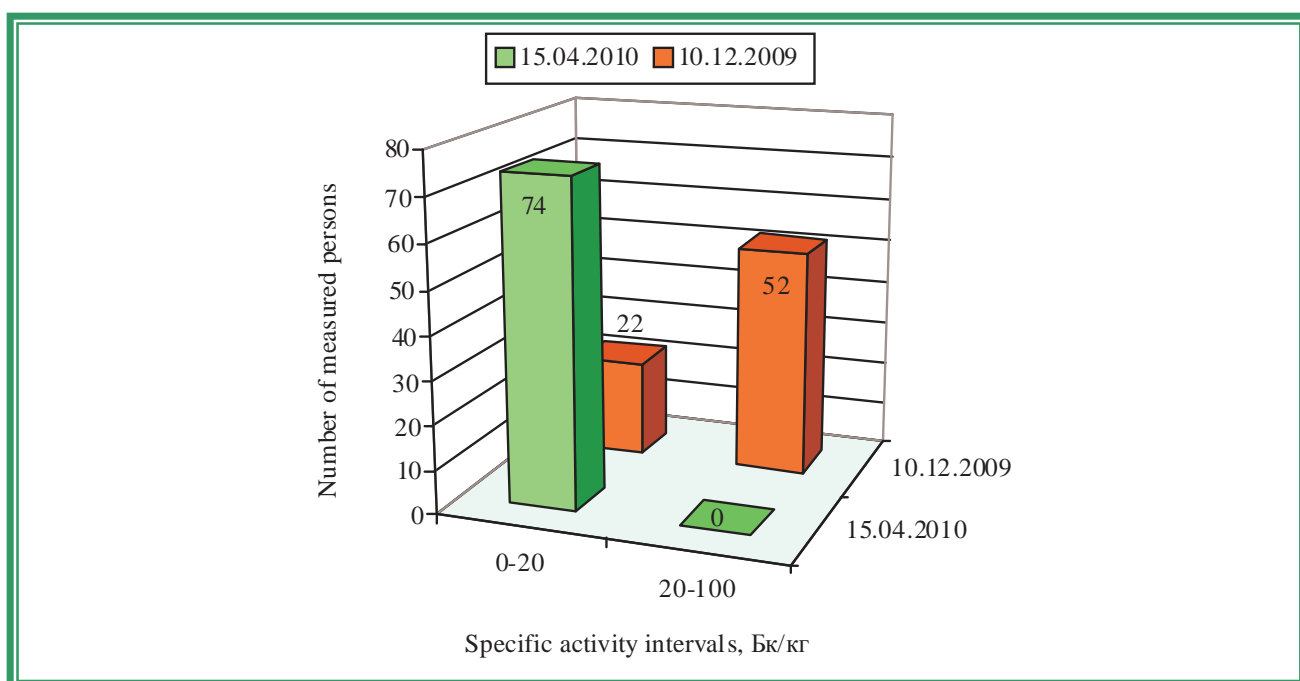


Figure 11 - Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Pererost secondary school and kindergarten of Dobrush district of Gomel region in accordance with the results of measurements dated to December 10, 2009 and April 15, 2010

## REVYATICHI

Characteristics	Value	Source
$^{137}\text{Cs}$ contamination density of the territory	There are no data	
Number of inhabitants	828 persons	Signevichi village council, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to January 2009 in the Revyatichi secondary school there are 156 children, 25 teachers and 14 persons of another staff; in the kindergarten there are 49 children and 20 persons of another staff.

Children from following settlements go to the Revyatichi secondary school and kindergarten: Revyatichi, Golitsy, Venin and Svadbichi.

### January 21, 2010

The measurement of children in the Revyatichi secondary school and kindergarten of Beryoza district of Brest region was performed in the school building. A total of measured persons was 127 persons (126 children and 1 adult).

Average  $^{137}\text{Cs}$  specific activity in the whole group (n = 126):  $(16.1 \pm 0.5)$  Bq/kg.

Average  $^{137}\text{Cs}$  specific activity in the critical group (n = 15):  $(23.8 \pm 0.4)$  Bq/kg.

Median value in the whole group: 16.2 Bq/kg.

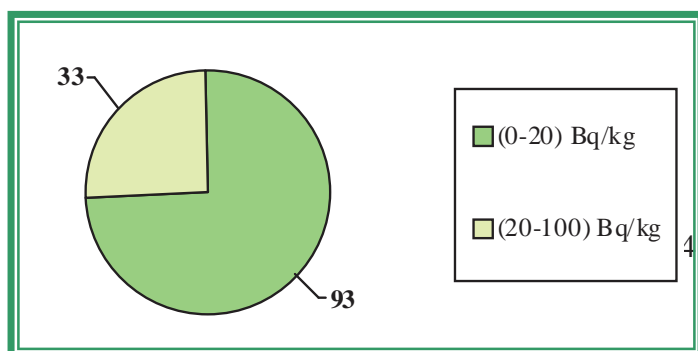
Median value in the critical group: 23.8 Bq/kg.

The table 11 demonstrates the maximal levels of  $^{137}\text{Cs}$  specific activity (the critical group) according to the results of measurements dated to January 21, 2010.

Table 11

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	D.S.V.	SCHOOLBOY	M	39	1997	26.3
2.	D.N.V.	SCHOOLGIRL	F	42	1993	26.0
3.	O.A.A.	SCHOOLGIRL	F	46	1994	25.7
4.	Z.E.N.	SCHOOLGIRL	F	49	1993	25.4
5.	K.O.A.	SCHOOLBOY	M	42	1998	25.3
6.	K.E.A.	SCHOOLGIRL	F	49	1995	24.3
7.	K.Yu.V.	SCHOOLBOY	M	40	1998	24.1
8.	G.I.V.	SCHOOLBOY	M	53	1994	23.8
9.	F.M.Yu.	SCHOOLGIRL	F	39	1998	23.4
10.	K.M.L.	SCHOOLGIRL	F	46	1996	23.3
11.	S.V.V.	SCHOOLBOY	M	45	1996	22.5
12.	L.D.N.	SCHOOLGIRL	F	46	1995	22.4
13.	V.D.A.	SCHOOLBOY	M	29	2000	22.1
14.	P.M.S.	SCHOOLGIRL	F	23	2001	21.6
15.	S.N.V.	SCHOOLBOY	M	51	1994	21.5

The figure 12 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Revyatichi secondary school and kindergarten of Beryoza district of Brest region in accordance with the results of measurements dated to January 21, 2010.



←Figure 12 - Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Revyatichi secondary school and kindergarten of Beryoza district of Brest region in accordance with the results of measurements dated to January 21, 2010

# SELETS

Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	There are no data	
Number of inhabitants	909 persons	Selets village council, dated to 01.01.2010
External dose	There are no data	
Internal dose	There are no data	
Cumulative dose	There are no data	

According to the data dated to May 2009 in the Selets secondary school there are 113 children, 23 teachers and 12 persons of another staff; in the kindergarten there are 34 children and 11 persons of another staff.

Children from following settlements go to the Selets secondary school and kindergarten: Selets, Kurovshchina, Panasovichi and Zubachi.

## May 18, 2010

The measurement of children in the Selets secondary school and kindergarten of Beryoza district of Brest region was performed in the school building. A total of measured persons was 87 persons (85 children and 2 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 85): (13.2 ± 1.0) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (25.4 ± 0.9) Bq/kg.

Median value in the whole group: 15.1 Bq/kg.

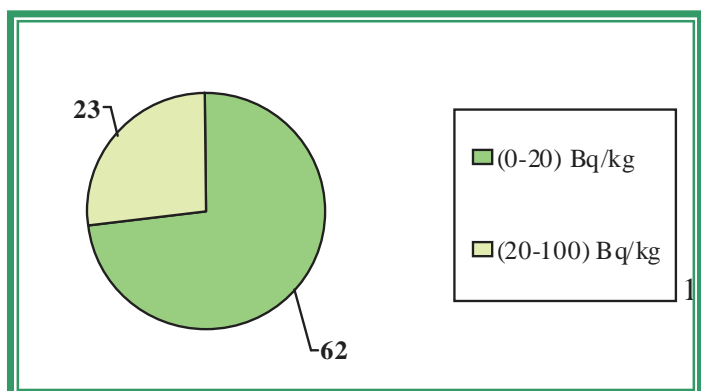
Median value in the critical group: 24.2 Bq/kg.

The table 12 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to May 18, 2010.

Table 12

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	P.N.I.	SCHOOLGIRL	F	42	1997	35.7
2.	R.V.N.	SCHOOLBOY	M	38	1998	28.7
3.	U.D.N.	SCHOOLBOY	M	41	1997	28.3
4.	R.A.A.	SCHOOLGIRL	F	54	1994	27.2
5.	H.N.V.	SCHOOLBOY	M	35	1999	25.5
6.	D.A.V.	SCHOOLGIRL	F	37	1998	24.9
7.	N.D.A.	SCHOOLBOY	M	43	1997	24.7
8.	G.E.A.	SCHOOLGIRL	F	40	1997	24.2
9.	E.A.N.	SCHOOLBOY	M	41	1997	24.0
10.	K.E.A.	SCHOOLGIRL	F	44	1995	23.7
11.	B.V.A.	SCHOOLBOY	M	32	1998	23.6
12.	B.M.I.	SCHOOLGIRL	F	50	1994	23.2
13.	P.N.G.	SCHOOLGIRL	F	42	1995	22.8
14.	S.A.P.	SCHOOLGIRL	F	33	2001	22.2
15.	M.O.Yu.	SCHOOLGIRL	F	43	2000	22.1

The figure 13 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Selets secondary school and kindergarten of Beryoza district of Brest region in accordance with the results of measurements dated to May 18, 2010.



←Figure 13 - Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Selets secondary school and kindergarten of Beryoza district of Brest region in accordance with the results of measurements dated to May 18, 2010

On May 17, 2010 1002 packings of the pectin preparation VITAPECT were given for children.

<b>SIVITSA</b>		
Characteristics	Value	Source
<sup>137</sup> Cs contamination density of the territory	2.6 Ci/km <sup>2</sup>	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Number of inhabitants	407 persons	Ivenets village council, dated to 01.01.2010
External dose	0.31 mSv/a	Dose catalogue of the Ministry for Public Health Services of the Republic of Belarus, 2004
Internal dose	0.60 mSv/a	-----«-----
Cumulative dose	0.91 mSv/a	-----«-----

According to the data dated to February 2010 in the Sivitsa basic school there are 50 children, 18 teachers and 6 persons of another staff; in the kindergarten there are 18 children and 4 persons of another staff.

Children from following settlements go to the Sivitsa basic school and kindergarten: Sivitsa, Ugly and Pogorelka.

## February 08, 2010

The first measurement of children in the Sivitsa basic school and kindergarten of Volozhin district of Minsk region was performed in the school building. A total of measured persons was 71 persons (59 children and 12 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 59): (19.1 ± 0.7) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (25.9 ± 0.8) Bq/kg.

Median value in the whole group: 18.9 Bq/kg.

Median value in the critical group: 25.3 Bq/kg.

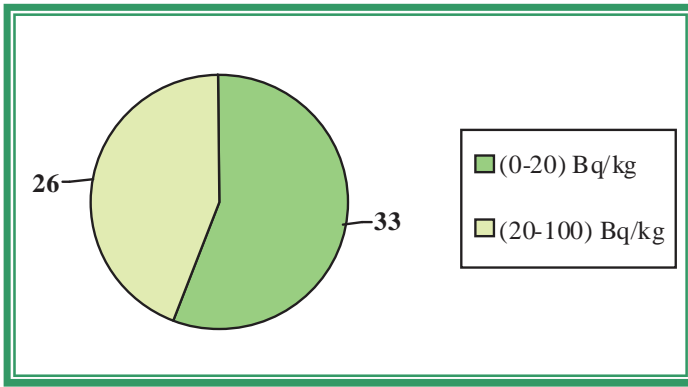
The table 13 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to February 08, 2010.

Table 13

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	Sch. Ya. Yu.	CHILD PRESCHOOL AGE	F	15	2007	34.0
2.	B. V. E.	CHILD PRESCHOOL AGE	F	18	2006	30.2
3.	B. K. V.	SCHOOLGIRL	F	29	1999	29.6
4.	P. A. A.	SCHOOLBOY	M	31	1999	27.2
5.	S. P. A.	CHILD PRESCHOOL AGE	F	17	2005	26.3
6.	G. A. V.	SCHOOLGIRL	F	37	2000	25.7
7.	K. I. A.	SCHOOLGIRL	F	41	1996	25.4
8.	K. D. A.	SCHOOLGIRL	F	40	1995	25.3
9.	G. E. N.	SCHOOLGIRL	F	38	1997	24.4
10.	M. D. A.	CHILD PRESCHOOL AGE	M	14	2006	24.1
11.	S. S. K.	SCHOOLBOY	M	36	1995	23.5
12.	S. V. S.	SCHOOLBOY	M	33	1999	23.4
13.	Sh. K. A.	SCHOOLBOY	M	32	2001	23.4
14.	P. A. A.	SCHOOLGIRL	F	23	2001	23.2
15.	G. E. V.	SCHOOLGIRL	F	53	1998	22.6

The figure 14 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to February 08, 2010.





←Figure 14 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to February 08, 2010

On February 12, 2010 136 packings of the pectin preparation VITAPECT were given for children.

### March 09, 2010

The second measurement of children in the Sivitsa basic school and kindergarten of Volozhin district of Minsk region was performed in the school building. A total of measured persons was 49 persons (45 children and 4 adults).

Average <sup>137</sup>Cs specific activity in the whole group (n = 45): (21.8 ± 0.8) Bq/kg.

Average <sup>137</sup>Cs specific activity in the critical group (n = 15): (28.1 ± 0.9) Bq/kg.

Median value in the whole group: 21.7 Bq/kg.

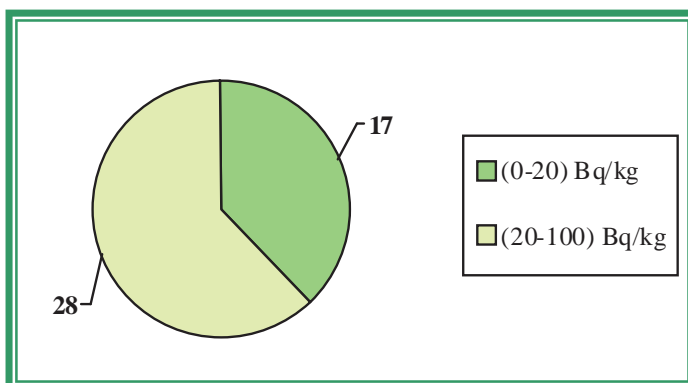
Median value in the critical group: 27.4 Bq/kg.

The table 14 demonstrates the maximal levels of <sup>137</sup>Cs specific activity (the critical group) according to the results of measurements dated to March 09, 2010.

Table 14

No.	Surname Name Patronymic	Occupation	Sex	Weight, kg	Year of birth	Sp. activity, Bq/kg
1.	G.I.S.	SCHOOLGIRL	F	40	1999	35.8
2.	B.K.O.	SCHOOLGIRL	F	57	1996	33.2
3.	G.E.N.	SCHOOLGIRL	F	38	1997	32.5
4.	Sh.V.A.	SCHOOLBOY	M	34	2000	29.4
5.	K.D.A.	SCHOOLGIRL	F	40	1995	28.9
6.	B.K.V.	SCHOOLGIRL	F	29	1999	28.3
7.	I.A.V.	SCHOOLBOY	M	22	2002	27.9
8.	Sh.T.Z.	SCHOOLGIRL	F	44	1995	27.4
9.	B.A.A.	SCHOOLBOY	M	32	1999	27.1
10.	Ch.A.V.	SCHOOLBOY	M	27	2000	25.8
11.	B.A.V.	SCHOOLGIRL	F	40	1999	25.3
12.	S.K.A.	SCHOOLGIRL	F	46	1995	25.2
13.	G.S.Yu.	SCHOOLGIRL	F	38	1999	24.9
14.	G.A.V.	SCHOOLGIRL	F	37	2000	24.9
15.	P.A.A.	SCHOOLGIRL	F	23	2001	24.8

The figure 15 contains the diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to March 09, 2010.



←Figure 15 – Diagram of the interval <sup>137</sup>Cs specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to March 09, 2010

To demonstrate the efficiency of the effects of pectin preparations there are comparative data on interval distribution of the specific activity of  $^{137}\text{Cs}$  in children having taken VITAPECT and having passed two WBC measurements (on February 08, 2010 and March 09, 2010). This group consists of 40 children.

## February 08, 2010

## March 09, 2010

The first measurement of children in the Sivitsa basic school and kindergarten of Volozhin district of Minsk region was performed in the school building. A total of measured persons was 71 persons (59 children and 12 adults).

The second measurement of children in the Sivitsa basic school and kindergarten of Volozhin district of Minsk region was performed in the school building. A total of measured persons was 49 persons (45 children and 4 adults).

The data of statistical processing of the results of measurements of the group of children having passed two WBC measurements and having taken VITAPECT-T (40 children).

Average specific activity of  $^{137}\text{Cs}$ :

after the first measurement:  $(19.2 \pm 1.0)$  Bq/kg,

after the second measurement:  $(22.6 \pm 0.9)$  Bq/kg.

Increase of average specific activity of  $^{137}\text{Cs}$  was 15%.

Increase of specific activity: in 45% children.

The same level of specific activity: in 30% children.

Reduction of specific activity: in 25% children.

The evaluation of the scientific significance according to T-Student criterion ( $n = 40$ ):  $t=2.97$ . The received criterion  $t > 1.96$ ;  $p < 0.01$ .

Median value after the first measurement: 19.3 Bq/kg.

Median value after the second measurement: 21.7 Bq/kg.

Increase of median value of specific activity of  $^{137}\text{Cs}$  was 12%.

It is known for sure that the majority of children did not take the drink VITAPECT. The VITAPECT for given to children to take it at home but their parents did not control the VITAPECT intake that caused the increase of average specific activity of  $^{137}\text{Cs}$ . Only 30% of children took VITAPECT. They had the decrease of average specific activity of  $^{137}\text{Cs}$  that was confirmed by the data of statistical data processing.

The figure 16 contains the diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to February 08, 2010 and March 09, 2010.

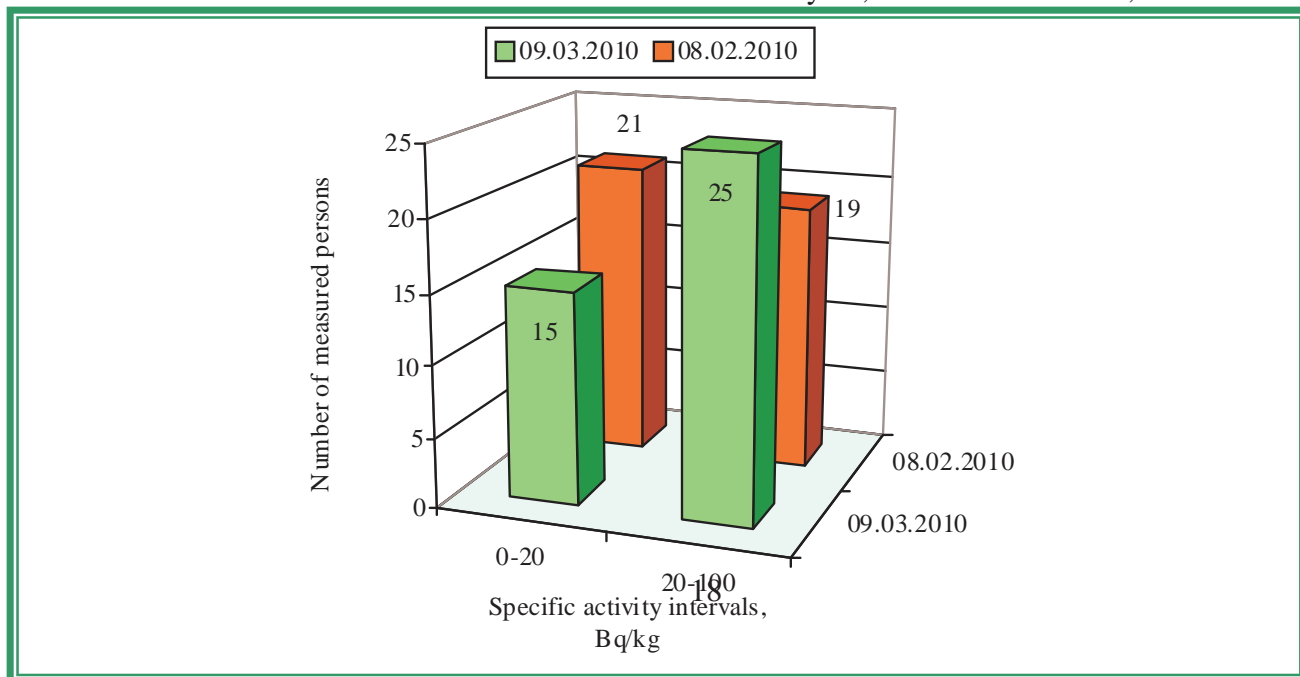


Figure 16 – Diagram of the interval  $^{137}\text{Cs}$  specific activity distribution in children in the Sivitsa secondary school and kindergarten of Volozhin district of Minsk region in accordance with the results of measurements dated to February 08, 2010 and March 09, 2010

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