

TEXT OF THE REPORT BY PROFESSOR YU. I. BANDAZHEVSKY

During the studies carried out, it was found that:

Radiation Monitoring

1. ^{137}Cs and ^{90}Sr radionuclides are present in soils of Ivankov district. An area adjacent to the radiation exclusion zone, i.e. to the Chernobyl nuclear power plant is the most contaminated (slide).

2. Local foodstuffs of plant and animal origin, forest foodstuffs, meat of wild animals consumed by the population of Ivankov and Polesie districts contain ^{137}Cs and ^{90}Sr radionuclides (Associate Professor N.F.Dubova will tell about this in more detail).

3. Foodstuffs in the Baltic countries, Ukraine and Belarus were contaminated with radioactive elements already in the 60s of the last century (slide).

4. In these years, an area of the Belarusian-Ukrainian Polesie was heavily contaminated with ^{137}Cs radionuclides (slide). No information is available on the contamination of the area with other radionuclides.

5. ^{137}Cs radionuclides were detected in a large number of children from Ivankov and Polesie districts (slide). It is impossible to measure ^{90}Sr levels in children using existing methods.

6. ^{137}Cs radionuclides were found in placentas of women living in Ivankov and Polesie districts (slide).

7. Sr, Ba and Mn levels in oats (grain) grown in Ivankov district are twice higher than in oats grown in areas not affected by the Chernobyl nuclear power plant accident (slide).

8. ^{137}Cs and ^{90}Sr radionuclides are currently contained in the wood from forests which all the population from Ivankov and Polesie districts is forced to use for heating houses and cooking. During the wood burning process, the above radionuclides are transferred to man by air. The population is also exposed to radioactive contamination as a result of using ashes from stoves in houses as fertilisers in their own gardens. As a result, vegetables, berries and fruits contain ^{137}Cs and ^{90}Sr radionuclides (slide).

Children's Health Status

9. The studies conducted by Professor Yu.I.Bandazhevsky during his work at Gomel State Medical Institute showed a marked incorporation of ^{137}Cs radionuclides in the thyroid gland, heart, brain and other vital organs (slide).

10. An association between ^{137}Cs levels and the frequency of cardiac abnormalities was found (slide).

11. According to results of the studies carried out in Ivankov and Polesie districts, Kiev region, Ukraine, in 2014 - 2017, a group of adolescents (age 12-17 years), first of all, a group of boys, should be considered to be a risk group for health issues.

12. According to ECGs, the majority of the examined children of this group (more than 80.0% of cases) had **cardiac abnormalities**, mainly abnormal heart rhythms (slides).

13. Increased blood pressure was observed in 33.3% of cases (slide).

14. There has been a steady increase in the number of patients with thyroid cancer in Kiev region affected by the Chernobyl nuclear power plant accident (slide). In this regard, all the children had their thyroid gland scanned.

15. Structural changes in the thyroid gland were identified in 6.7% of cases using ultrasound scanning (slide).

16. Disrupted thyroid hormone production was found in 39.2% of cases, in 48.9% among boys and in 29.7% among girls (slide).

17. Changes in the liver were detected in 35.0% of cases using ultrasound indicating serious metabolic disorders (slide).

18. Dysfunctions of the thyroid gland, other endocrine organs and the cardiovascular system are closely related to abnormalities that occur under the influence of a radiation factor in the central nervous system, in particular, in its hypothalamic area (slide).

19. Abnormal dopamine production detected by Dr. V.N.Pilipenko in children suffering from radiation exposure is clear evidence for the damage to the neuroendocrine system (slide).

20. Experimental studies in animals showed an abnormal production of neurotransmitters in different areas of the central nervous system as a result of the effect of incorporated ^{137}Cs and ^{90}Sr radionuclides (slide).

Genetic Changes and Metabolism

21. Genetic abnormalities of the folate cycle regulating methionine metabolism were observed in 97.0% of the children, the carriership of two, three and four risk alleles was detected in 77.6 % of cases (slide).

22. Hyperhomocysteinemia (increased blood homocysteine levels), a metabolic marker of methionine metabolism and state of folate metabolism, was noted in 75.3% of the children (slide). Hyperhomocysteinemia is a very dangerous condition for human health which leads to cardiovascular diseases, cancer and complications of pregnancy and fetal development (slide).

23. Ivankov district's mortality rates are the highest in Kiev region and Ukraine (slide). These rates are mainly due to cancer and cardiovascular diseases.

24. The state of folate metabolism is associated with breast cancer and its frequency is steadily increasing in areas of Ukraine contaminated with radioactive elements (slide).

25. Children with abnormal folate metabolism are at risk of developing breast cancer.

26. The main cause of abnormal folate metabolism in the children examined is a radiation factor. Hyperhomocysteinemia was observed in 75.0% of the children in whom ^{137}Cs radionuclides were detected (slide).

27. An increase in blood homocysteine levels in the same children was noticed in 78.6% of cases after forest fires in the Chernobyl exclusion zone in 2015 (slide).

28. There is a latent folic acid and vitamin B₁₂ deficiency in the children whose blood homocysteine levels are higher than the normal reference range. It should be taken into account when carrying out preventive measures in areas affected by the Chernobyl nuclear power plant accident.

29. The studies carried out by us have revealed for the first time the elements of human metabolism (folic acid cycle, methionine metabolism, homocysteine production) reacting to the impact of an external radiation factor. It allows to use them not only for monitoring health of the child and adult population, but also for assessing the state of the environment.

30. In order to prevent cancer and cardiovascular diseases in areas suffering from radiation exposure, it is necessary to continuously monitor the radioactivity and health of the whole child population and determine the state of the genetic system regulating the folic acid cycle, and blood homocysteine, folic acid and vitamin B₁₂ levels in children.

**TEXT OF THE REPORT
BY ASSOCIATE PROFESSOR N. F. DUBOVA**

31. ¹³⁷Cs and ⁹⁰Sr radionuclides enter the body of children from Ivankov and Polesie districts through the local food, forest fruits, mushrooms and meat of wild animals (slides).

32. Poverty of the population is one of the main causes of consuming food of low quality and nutritional value containing radioactive elements (slide).

33. Children's health reflects the socio-economic level of the district where they live.

34. The children from Polesie district have a higher frequency of cases of increased radionuclide levels, hyperhomocysteinemia, disrupted thyroid hormone production and folic acid and vitamin B₁₂ deficiency than those from Ivankov district, which is more developed economically and socially (slides).

35. Pathological changes are more evident in the group of adolescent boys (slide).

36. A latent folic acid and vitamin B₁₂ deficiency is observed in all the children with elevated blood homocysteine levels.

37. The purpose of an Information and Counselling Centre established at Ivankov Central District Hospital is to prevent the effects of the radiation factor on children and adults and provide assistance in issues relating to food hygiene.

38. The activities of the Information and Counselling Centre are presented on a slide (slide).

39. Enumeration and characteristics of the activities of the Centre (slides).

40. In order to solve a problem relating to the provision of high-quality food not containing radioactive elements for children, humanitarian support is being sought. In this regard, we welcomed an initiative by an Italian public organisation *Mondo in Cammino* (President - Massimo Bonfatti), which, with the participation of a Coordination and Analytical Centre Ecology and Health, was able to fund the provision of high-quality meals for children at schools in the villages of Radyнка and Volodarka, Polesie district (slide- photo of children in a dining room).

41. The effectiveness of the activities of the Information and Counselling Centre can be seen in the decrease in the proportion of cases of children's radiocaesium levels above 10 Bq/kg by the end of the project compared to the start (slide).

Thank you for your attention (slide).