

Rezumatul activității și a rezultatelor obținute în subprogram în anul 2025***MONITORINGUL EXPUNERII LA RADIAȚII IONIZANTE A PERSONALULUI
EXPUS PROFESIONAL ȘI PUBLICULUI CU ELABORAREA MĂSURILOR DE
RADIOPROTECȚIE*****Codul subprogramului 13.01.02**

Cercetările țin de în 36 publicații științifice: Articole în reviste științifice din bazele de date WEB OF SCENICE/SCOPUS (3), Monografie (1); Articole în materiale ale conferințelor științifice naționale/internaționale (4), Teze ale conferințelor științifice naționale/internaționale (23), Brevete de invenții și alte obiecte de proprietate intelectuală, materiale la saloanele de invenții (8); pliante (2), hărți (2), Atlas (1). Prezentări la Simpozioane științifice (23); Program/Plan Național de control al expunerii la radon (1).

ABSTRACT

The research is in two directions: quantifying the exposure of medical personnel to artificial medical sources of ionizing radiation among specialists (imaging physicians/radiologists) in radiology and medical imaging departments in the country (1) and controlling the exposure of the population, including children, to natural sources of ionizing radiation, including radon, from indoor air: homes, public buildings (educational institutions), etc. In order to study and characterize the immune status of personnel professionally exposed to IR (specialists from the Oncology Institute and IMSPs in the municipality of Bălți), in comparison with the control group (not exposed to IR), based on the use of monoclonal antibodies by the flow cytometry method, the following lymphocyte populations were studied: T-lymphocytes CD45+CD3+; T-Helpers CD3+CD4+; T-Cytotoxic CD3+CD8+; Immunoregulatory Index CD3+CD4+ / CD3+CD8+; NKT cells CD3+CD56+; NK cells CD3-CD56+; B-lymphocytes CD3-CD19+ and activated T-lymphocytes CD3+HLA-DR+. The level of the immunological index (II) in the subjects in question (individually and per group) and the structure of lymphocyte populations were detected. The average value of II in the group of occupationally exposed individuals was 1.64 ± 0.73 , and in the control group 1.96 ± 1.0 . BOX PLOT analysis for immunophenotyping investigations of T and B lymphocyte populations demonstrated a similar profile for the research groups (occupationally exposed and control individuals) but differed according to the quantitative analysis of the indicators. At the same time, it was detected that the immunoregulatory indices in occupationally exposed individuals to ionizing radiation were more diminished compared to the control, meaning that the subjects exposed to IR manifested an immunocompromised status.

The study of the structure of general morbidity in the group of occupationally exposed to IR has detected a wide spectrum of diseases, related to the impairment of the endocrine, cardiovascular, digestive, visual systems, etc. The following were ranked first: Thyroid gland diseases; HTA; Heart failure; Diabetes mellitus; Obesity. The results show that the IgG immunoglobulin index showed individual variation, depending on the workplace and the type of source used by the occupationally exposed. Reduced IgG values are found in the following clinical conditions: Non-IgG myeloma, Protein loss syndromes, Chronic lymphocytic leukemia. An increased level of

IgG is found in the case of acquired immunodeficiency, in multiple sclerosis, as well as in the case of chronic hepatitis. An increase in IgG can also indicate severe malnutrition, IgG myeloma and autoimmune diseases. Based on the results of measuring radon concentrations in indoor air, the health risk was calculated by establishing the exposure doses of the population and children in educational institutions, mapping radon concentrations. The results were placed in the European Atlas of Natural Radiation Sources (radon), published by the European Commission, JRC.

The results obtained are reflected in 36 scientific publications: Articles in scientific journals from the WEB OF SCIENCE/SCOPUS databases (3), Monograph (1); Articles in materials of national/international scientific conferences (4), Theses of national/international scientific conferences (23), Patents of inventions and other intellectual property objects, materials at invention salons (8); leaflets (2), maps (2), Atlas (1). Presentations at scientific symposia (23); National Program/Plan for control of exposure to radon (1).