**SCREENING AND EVALUATION OF THE GENOTOXICOLOGYCAL EFFECT OF IONIZING RADIATION IN OCCUPATIONALLY EXPOSED HEALTHCARE WORKERS, USING CYTOGENETIC METHODS**

**Introduction:** Cytogenetic monitoring in humans suggests that chronic exposure of the organism to various physical and chemical agents shows potential genotoxicity i.e. affects the genetic material of the exposed individual. This means that higher doses of these agents are lethal, toxic or carcinogenic, while small doses can have a cumulative effect, can persist in longer time interval and their consequences can be seen in some of the next generations.

**Project goals:** To indicate the importance of the application of micronucleus test as standardized cytogenetic method as an important biomarker in detecting the impact of ionizing radiation on the entire genetic material in occupationally exposed health care workers.

**Patients and methods:** The study will include health professionals who are directly and on daily basses exposed to ionizing radiation as physical agents and a control group that represents young and healthy population that is not exposed to any physical and chemical agents. By applying the micronucleus test, quantitative and qualitative analysis will be performed on binuclear lymphocytes and micronucleus as reliable indicators of possible chromosomal damage in the cells. The emergence of micronucleus is important quantitative biomarker that proves the existence of structural chromosomal aberrations which are result of different genotoxic agents *in vitro* or *in vivo* conditions.

**Expected results:** We expect that in the exposed group (occupationally exposed health care workers) the number of micronucleus in lymphocytes will be increased, indicating the occupational risk for certain diseases or changing the work position. The number of micronucleus in the control group will be in the normal reference values​​.