

## **RADIATION MEDICINE**

Guidelines for the 2<sup>nd</sup> year students (Faculty for International Students)

### **LESSON № 7: MEDICAL EXPOSURE. THE PRINCIPLES OF RADIATION DOSE REDUCTION IN HUMANS**

**THE AIM: to get acquainted** with classification of ionizing radiations, their properties;  
**to study** stages of radiation injury;  
**to master** the main types of cell reactions to irradiation;  
**to perform** laboratory work.

**DURATION:** 3.0 hours.

**PLACE:** student's workshop.

**EQUIPMENT:** methodical grant, tables, PowerPoint presentation, tasks according to the topic.

#### **Required theoretical knowledge**

1. Stages of radiation injury: direct and indirect action.
2. The radiolysis of water, the main products of radiolysis. The influence of oxygen on radiolysis.
3. Types of cell reactions to irradiation.
4. Medical irradiation: a concept. The concept of closed and open sources of ionizing radiation.
5. The main documents that regulate the work with ionizing radiation sources.
6. Methods of protection against ionizing radiation "protection by amount", "protection by time", "distance protection", "protection by screen".
7. The principles of radiation dose reduction in patients.

#### **Laboratory (individual) work of students**

1. To master the principles of operation of the detector setup PЗБ-05 to control contamination in surfaces of the arms, legs, body and clothing of human beta-active radionuclides.

#### **Literature**

##### **Basic:**

1. Radiation medicine : учебное пособие для иностранных студентов учреждений высшего образования : допущено Министерством образования Республики Беларусь / А.Н. Стожаров [и др.]; под ред. А.Н. Стожарова. – Минск: Новое знание, 2020. – 203 с.

##### **Additional:**

1. Мойсеёнок, Е.А. Лекции по радиационной медицине (в таблицах) = Lectures on Radiation Medicine (in tables): пособие для студентов факультета иностранных учащихся (на английском языке) [изд. на CD-дисках] / Мойсеёнок Е.А. – Электрон. текст. дан. и прогр. (объем 29 Мб). – Гродно: ГрГМУ, 2012. – 1 электрон. опт. диск (CD-ROM).

2. Radiation and Ecological Medicine: Electronic Educational and Methodological Complex. Access: <http://edu.grsmu.by/course/view.php?id=99>