

RADIATION MEDICINE

Guidelines for the 2nd year students (Faculty for International Students)

LESSON № 1: INTRODUCTION TO RADIATION MEDICINE. BASES OF IONIZING RADIATION.

THE AIM: to get acquainted with the basic concepts of radiation medicine;
to learn the basic terminology and application of the law of radioactive decay to predict changes of radiation situation;
to master practical skills of calculating projected at different times of the quantity of radionuclides and evaluation of the results;
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. Radiation medicine: the concept, purposes, tasks, methods, connection with clinical disciplines. The history of radiation medicine development.
2. Classification of ionizing radiations, their properties.
3. Radioactivity: the concept, systemic and traditional units of radioactivity, their relationship.
4. The law of radioactive decay.
5. Types of radioactive transformations of nuclei: alpha-, beta-, gamma-transformation of the nuclei.
6. The phenomenon of induced radioactivity.

Laboratory (individual) work of students

1. Solution of situational tasks.

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>

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LESSON № 2: RADIOACTIVITY. UNITS OF MEASUREMENT.

THE AIM: to get acquainted with the main dosimetric units;
to examine the basic units of doses and the rules for their use;
to master the methods of ionizing radiation registration;
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. Classification of ionizing radiation registration methods.
2. Detectors and instruments used for registration and measurement of radioactivity.
3. Radiometry. Principles of radiometric researches.
4. Biological dosimetry.

Laboratory (individual) work of students

1. Solution of situational tasks.

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:

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LESSON № 3: DOSIMETRY AND RADIOMETRY

THE AIM: to get acquainted with the main dosimetric units;
to examine the basic units of doses and the rules for their use;
to master the methods of ionizing radiation registration;
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. Doses: exposure, absorbed, equivalent, effective (SI and non-SI units of doses, the ratio between them).
2. General and individual dosimetry.
3. The collective dose. Monitoring of external irradiation doses of a man.
4. Radiometry. Principles of radiometric researches.
5. Control of internal exposure of the population.
6. Methods of incorporated radiocesium measurement.

Laboratory (individual) work of students

1. Solution of situational tasks.

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:

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