someone who won't just perform their job function, but will be a good personality fit for the company and make a good impression on clients [9].

References:

1 What are the 'soft skills' employers want? [https://nationalcareersservice.direct.gov.uk/aboutus/newsarticles/Pages/Spotlight-SoftSkills.aspx].
2 Why Is It Important to Treat Others with Honesty Respect and Consideration? [http://www.ask.com/question/why-is-it-important-to-treat-others-with-honesty-respect-and-consideration].
3 Helping People Take Responsibility [http://www.mindtools.com/pages/article/taking-responsibility.htm].
4 Soft Skill: Positive Attitude [http://jobs.aol.com/articles/2014/02/10/soft-skill-positive-attitude/].
5 Teamwork in the Classroom [http://www.ndt-ed.org/TeachingResources/ClassroomTips/Teamwork.htm].
6 10 tips for dealing with change in the workplace [http://www.techrepublic.com/blog/10-things/10-tips-for-dealing-with-change-in-the-workplace/257/#].
7 Boulden, George P. Thinking Creatively / G. Boulden. – London : Dorling Kindersley, 2002. – 72 p.: il. – Index: p. 70-71.
8 5 Ways to Stimulate Creative Thinking.
9 Hard Skills [http://www.investopedia.com/terms/h/hard-skills.asp].

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Investigation of radiation by Geiger- Muller counting tube

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At the moment there is a problem with radiation monitoring of the environment. For this purpose, there are different technical devices such as dosimeters, ionization chambers, scintillation counting-tube and Wilson chamber, solid-state device, bubble chamber. But the most procurable and prevalent method for monitoring radiation situation is Geiger-Muller counting tube, which allows to register the elementary particles and electromagnetic rays.

Radiation has no colors, no smell and can be detected only by special devices. This work is devoted to the method of registration of elementary particles by Geiger -Muller counting tube.

As it is known, effect of radiation was invented by Becquerel in 1896 year. Radiation is spontaneous emission of elementary particles which cause the electromagnetic rays. There are three radiation components: alpha-, beta – and gamma -rays. Alpha rays represent the flow of nuclei helium, beta rays represent a stream of fast electrons and gamma rays represent electromagnetic rays. Beta and gamma rays are more dangerous. Quantity of radiation for people is 5 mSv in years.

Registering apparatus is macroscopic system, which is in unsteady condition. Depending on purposes and conditions of experiments, different register apparatus is used. Register apparatus are notable for efficiency factor, minimum time of register, sensibility.

Geiger-Muller counting-tube is one of the most important devices for automatic counting of elementary particles. Action of device based on impact ionization. Geiger-Muller counting- tube is mainly used to detect electrons and gamma rays.

That laboratory setup is made of modules such as supply equipment, voltage switch converter, impulse counter, acoustic relay, pulse former.

A natural radiation background and radiation of materials were investigated by Geiger-Muller counting tube. Materials ware tested at a distance of 0.1 meters from Geiger-Muller counting tube. The experiments were conducted at different times of day. The more deviations from natural radiation background showed materials such as granite, obsidian, rock from the mine, coal, pyrite in coal .This is due to the fact that those materials are found at greater depths of the earth, where level of radiation is high.

№	Material	Quantity of impulse 1/min., without a natural radiation background
1	Granit	9
2	Obsidian	8
3	Rock from the mine	7
4	Coal	7
5	Pyrite in coal	6
6	Pumice-stone	4

Table №1.Investigation of radiation materials.

During the experiment, there were researched materials of different thickness. As radioactive preparation was used needle of Wilson chamber. Materials such as plumbum, ferrite in metal, graphite, glass, water, soap, hard wax, bronze, steel, foam plastic have a low level of absorbency. This is because those materials have high density and properties.

№	Material	Thickness, mm	Quantity of impulse 1/min., without a natural radiation background
1	Plumbum	3,3	5
2	Ferrite metal	3	6
3	Graphite	12,5	7
4	Glass	4	8
5	Water	15	10
6	Soap	15	12
7	Hard wax	35	12
8	Bronze	0,6	16
9	Steel	0,4	24
10	Foam plastic	30	127

Table №2. Absorbency materials of different thickness.

In the experiment, were used materials such as ceramic tile, wood, linoleum, cardboard and plastic. By increasing material thickness absorbance was increased.

So in conclusion, despite the fact that there are similar devices, modular laboratory setup was made in order to conduct investigation of radiation. Results of research match with results were published in the book. Also handheld indicator was made, which allows taking subsoil in different places of a town for investigation.

References:
1. Enohovich A.S. Book of reference on Physics and Technology,1989. 224p. (Accessed: 2 April 2014) (in Russian).
2. Gribov L.A, Prokofiev N.I. Basis of physics .Publ. Gardarika, 1998. 564p. (Accessed: 15 March 2014) (in Russian).
3. Chupashev V.G. Making elements of devices in conditions room of physic/ / Physics in the school. 2009. № 5.(Accessed: 3 February 2013) (in Russian).
4. http://www.krugosvet.ru/enc/energetika-i-stroitelstvo/statya-radiatsiya (Accessed: 25 March 2014) (in Russian).

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Problems of commercial gasoline production during the process of zeoforming

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Many researchers are engaged in problem of getting a motor fuels that meet the modern requirements from primary products, on the basis of GOST 51866 – 2002 [1]. This is due to the need for more rational use of available resources in the country, the lack of high –quality and affordable motor fuel, as well as the struggle for environmental improvement [2].

Currently, the European Union (EU) and the United States of America (USA) identifies the key requirements for motor gasoline until 2010, which are presented in Table 1. Major changes are associated with a decrease in the sulfur content, aromatic hydrocarbons (primarily benzene) and olefins in gasoline.

Table 1 – Requirements of EU countries to gasoline [4]

Data	Values in different periods of time, year	
	2005 – 2009	2010
1	2	3
Sulfur content, ppm	50,0	10,0
Content,%:		
Aromatic hydrocarbons	35,0	25,0
Olefins	18,0	15,0
Benzene	1,0	0,7
Oxygen	2,7	2,7
The volume fraction of vaporized gasoline,%:		
at 100°C	46,0	46,0
at 150°C	75,0	75,0

To preserve the traditional markets, domestic refineries should produce commercial gasoline, which satisfies its quality characteristics with international standards.

On July 1, 2002 enacted the State Standard of the Russian Federation GOST R 51866 – 2002 “Motor fuel. Unleaded petrol. Specifications”, which is adapted under taken in the EU environmental programs and standards for motor vehicle emissions. Table 2 presents the main indicators of the quality of gasoline in Russia.

Table 2 – Key indicators of the quality of gasoline in Russia [1]

Data	GOST R 51866 – 2002
1	2
Octane number (ON) (Research Method (RM)) / Octane	95/85