**Тема:**  «Правила безопасности работы с электричеством. Короткое замыкание, дуговые вспышки»

**Цель:** Повторить грамматический материал , продолжить изучать лексическую тему «электричество, правила безопасности электрика на рабочем месте».

**Задачи:** Отработать навык работы (в т.ч. перевода) с профессиональной лексикой по теме «электричество», повторить тематический материал, актуализировать имеющиеся знания.

**Специальность:** 13.02.09 Монтаж эксплуатации линий электропередачи, 13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

1. **Learn the glossary**
2. **Read the text**
3. **Do the tasks**

**Electric Shock**

*There are many factors that influence the severity of the electrical shock that results when a person comes into contact with a live conductor.* *These factors include voltage, current, waveform, whether it’s alternating current or direct current, the frequency of AC, and the length of time of exposure*. In addition, the impedance of the human body has a direct effect on the severity of the shock. The average person has an impedance of about 1000 ohms from one hand to the other, but this can vary depending on body shape, age, weight, sex, the path of the current through the body (if it’s other than hand to hand), the amount of clothing worn, and the amount of moisture involved. It doesn’t take much current to make a human heart go into defibrillation. The body’s own natural electrical pulses that pace the heart are on the order of a millionth of an amp. As little as 100 to 300 milliamps passing via the heart can interrupt its natural rhythm and cause it to go into fibrillation. *When that happens, the heart flutters and can’ deliver the necessary oxygen to the blood, eventually causing death.* Fortunately, we have a certain amount of control over the impedance we present to a power source. We can increase our impedance by wearing protective clothing, including V-rated gloves, rubber-soled shoes, long pants and shirt made of cotton (rather than nylon or other synthetic fabrics that will melt to the skin), a hat — preferably a hard hat or some other insulating material — and thick socks. We can take off dangling jewelry like necklaces or earrings, and carry a carpet to stand on in the event our work environment is bare concrete. We can use V-rated tools and we can ensure that we are not standing in water when we’re working on live electrical equipment.

**Arc Flash and Arc Blast**

*In addition to the hazards of direct electrical shock, the production electrician faces other hazards as well, including arc flash and arc blast.* In fact, according to the National Fire Protection Association (NFPA), most electrical accidents that require admission to the hospital are caused by arc flash burns, not because of electrical shock. In the United States alone, over 2000 people are admitted to burn centers with severe burns due to arc flash each year. *An arc flash is when the air around a conductor becomes ionized and changes from an insulator to a conductor.* When that happens, the live conductor can discharge through the air to another live conductor or to a grounded conductor. The surrounding air can erupt in a plasma ball that engulfs the air and then dissipates in a fraction of a second. The temperature of the air can reach 19,427°C (35,000°F). If anyone is unfortunate enough to be in the arc flash zone, they could be severely burned. In addition to the danger of the flash, an arcing conductor can produce an explosive blast with tremendous pressure*. In the presence of the ultrahigh temperatures produced by an arc flash, copper can vaporize and expand 67,000 times, producing a shower of molten metal.* The blast can reach thousands of pounds per square foot and cause great damage; An arc can be initiated by several triggers: dust, impurities, and corrosion of insulators can initiate an arc and cause it to flash over. Water condensation or dripping water can also create a conductive path for an arc to flash over. Sometimes arcs are caused by a person accidentally touching a live part or dropping a tool into live equipment. Conductors can also flash over if the voltage is high enough and the gap to another conductor or ground is short enough. And sometimes the insulating material breaks down, allowing an arc to jump via it or around it.

1. **Translate the lines given in italics into Russian.**
2. **Answer the following questions using the text:**
3. What is the arc flash?
4. What are the reasons of arc flashes as well as short circuits?
5. What happens when human body is being electrocuted?
6. How can you avoid SCs and AF?
7. **Find English equivalents from the ext for the followings:**
8. Провод под напряжением
9. Нарушить естественный ритм
10. Прикипеть к коже
11. Доставлены в ожоговые центры
12. Распадаться на составляющие
13. Передать заряд по воздуху
14. Изоляция истончается
15. **Match the word with it’s definition:**

|  |  |
| --- | --- |
| 1. Grounding | 1. is a measure of the opposition to current flow in an electrical circuit. |
| 1. Impedance | 1. is an object or type of [material](https://en.wikipedia.org/wiki/Material) that allows the flow of [charge](https://en.wikipedia.org/wiki/Electric_charge) ([electrical current](https://en.wikipedia.org/wiki/Electrical_current)) in one or more directions. |
| 1. Resistance | 1. is a closed loop that electrons can travel in. |
| 1. Arc flash | 1. is a therapeutic technique that involves doing activities that “ground” or electrically reconnect you to the earth. |
| 1. Conductor | 1. is a measure of the opposition to electrical flow. |
| 1. Circuit | 1. is the light and heat produced from an electric arc supplied with sufficient electrical energy to cause substantial damage, harm, fire, or injury. |

1. **Fill in the gaps with the words from your glossary:**
2. All of us need love! – You are the romantic idiot! You better need an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!
3. The electricity blast may cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or even death
4. The intensity of current depends on\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Where is your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? You can not work without them!
6. Flash arc may not only scary you, but also it may cause\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of electrical shock depends on the voltage
8. He survived at that incident for that he had a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_on his head
9. This wire can be considered as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_for the AC