**Иностранный язык в профессиональной коммуникации**

**3 семестр**

**ESSENTIAL VOCABULARY**

negligence ['neglɪʤən(t)s] – небрежность, халатность

accident – несчастный случай

disaster – катастрофа

carbon monoxide [mə'nɔksaɪd] – окись углерода, угарный газ

methane ['miːθeɪn] – метан

asphyxiation [æsˌfɪksɪ'eɪʃən] – асфиксия, удушье

harmful – вредный, губительный

rock fall – обвал породы

pneumoconiosis [ˌnjuːmə(ʊ)kəʊnɪˈəʊsɪs] – пневмокониоз

cave-in – обрушение

carbon dioxide [daɪ'ɔksaɪd] – двуокись углерода углекислый газ

affect – поражать, причинять вред

ignite – воспламенять

flammable gas – горючий газ

hearing loss – потеря слуха

heat stroke – тепловой удар

humidity – влажность

confined space – замкнутое пространство

**SAFETY. DANGERS IN MINES**

1. **Translate the text:**

**SAFETY FIRST**

Mining is a dangerous occupation, where negligence and carelessness result in injuries and fatalities. Safety has long been a concern in the mining business especially in sub-surface mining. The Courrières mine disaster, Europe's worst mining accident, involved the death of 1,099 miners in Northern France on the 10th of March, 1906.

Mining ventilation is a significant safety concern for many miners. Poor ventilation of the mines causes exposure to harmful gases, heat and dust inside sub-surface mines, which can cause injury, illness and death. Rock dusts, including coal dust and silicon dust can cause long-term lung problems, including silicosis, asbestosis and pneumoconiosis (also known as “miner’s lung” or “black lung disease”).

Gases in mines can poison the workers or displace the oxygen in the mine, causing asphyxiation. Canaries were once regularly used in coal mining as an early warning system. Toxic gases such as carbon monoxide, methane or carbon dioxide in the mine would kill the bird before affecting the miners. Signs of distress from the bird indicated to the miners that conditions were unsafe. Nowadays, the Mine Safety and Health Administration requires that groups of miners carry gas detection equipment that can detect common gases, such as CO, O2, H2S, CH4. Ignited methane gas is a common source of explosions in mines. Frictional heat and sparks generated by mining equipment can ignite methane gas. Regulation requires that all production stop if there is a concentration of 1.4 per cent of flammable gas present.

Miners utilize equipment strong enough to break through extremely hard layers of the Earth's crust. This equipment, combined with the closed workspace that underground miners work in, can cause hearing loss. For example, a roof bolter (commonly used by mine roof bolter operators) can reach sound power levels of up to 115 dB. Combined with the reverberant effects of underground mines, a miner without proper hearing protection is at a high risk for hearing loss. By age of 50, nearly 90 per cent of miners have some hearing loss, compared to only 10 per cent among workers not exposed to loud noises. Roof bolters are among the loudest machines, but auger miners, bulldozers, continuous mining machines, front end loaders, and shuttle cars and trucks are also among those machines most responsible for excessive noise in a mine work.

Since mining entails removing dirt and rock from its natural location creating large empty pits, rooms and tunnels, cave-ins as well as ground and rock falls are a major concern within mines. Modern techniques for support and bolting of walls and ceilings within sub-surface mines have reduced the number of fatalities due to cave-ins, but ground falls continue to represent up to 50 per cent of mining fatalities. Even in cases where mine collapses are not instantly fatal, they can trap mine workers deep underground. Cases such as these often provoke high-profile rescue efforts, such as when 33 Chilean miners were trapped deep underground for 69 days in 2010.

High temperatures and humidity may result in heat-related illnesses, including heat stroke which can be fatal. The presence of heavy equipment in confined spaces also poses a risk to miners, and despite modern improvements to safety practices, mining remains dangerous throughout the world.

Modern mines use automation and remote operation to improve the safety of mine workers. Examples include automated loaders and remotely operated rock breakers.

1. **Read the text again and tick A, B, or C.**
2. The Courrières mine disaster, the worst mining accident ever, involved the death of 1,099 miners in Northern France on the 10th of March, 1906.

A True ☐ B False ☐ C Doesn’t say ☐

1. Injury, illness and death are the results of exposure to harmful gases, heat and dust inside sub-surface mines.

A True ☐ B False ☐ C Doesn’t say ☐

1. Deep drilling operations and a rescue capsule were involved to rescue the 33 Chilean miners trapped in collapsed underground mine.

A True ☐ B False ☐ C Doesn’t say ☐

1. Mine automation and remotely controlled operations help to improve the safety of mining.

A True ☐ B False ☐ C Doesn’t say ☐

1. A canary in the mine used to warn the miners about danger by singing.

A True ☐ B False ☐ C Doesn’t say ☐

1. Coal dust, just as methane gas, is a common cause of explosions in coal underground mines.

A True ☐ B False ☐ C Doesn’t say ☐

1. **Complete the sentences with the words from A and B and insert the missing word combinations in the following sentences:**

|  |  |
| --- | --- |
| A  Mine  Toxic  Gas  Coal-dust  Safety | B  Chemicals  Procedures  Explosion  Collapses  leaks |

1. One of the most common of all underground mining accidents, \_\_\_\_\_\_\_\_\_\_, occur when the walls and ceilings of underground mineshafts have not been properly secured.
2. Mining involves the use of many \_\_\_\_\_\_\_\_\_\_.
3. Fires can occur in mines for a range of reasons, the most common being \_\_\_\_\_\_\_\_.
4. A \_\_\_\_\_\_\_\_\_\_ ripped through this mine in Northern France on March 10, 1906.
5. \_\_\_\_\_\_\_\_\_\_ need to be carefully followed to reduce risk factors.
6. **Insert the missing word combinations in the following text. Use the words from the box.**

|  |
| --- |
| 1. Blasting safety, surface mining, remote area, blasting geometry, mechanical conditions |

Blasting and drilling are closely linked in mining and excavation today. In underground and \_\_\_\_\_\_\_\_\_\_, the main purpose of rock blasting is to fragment and heap the excavated rock to make loading and haulage as easy as possible. The geological and \_\_\_\_\_\_\_\_\_\_ of the rock and some limitations (populated areas, industrial plants, hospitals) should determine the final blasting procedure, \_\_\_\_\_\_\_\_\_\_, the type of explosive chosen and detonators. In a \_\_\_\_\_\_\_\_\_\_, blasting may be restricted by the limited availability of explosives and blasting equipment.

Blasting is affected by the following variables:

• rock geological and mechanical properties;

• environmental and safety aspects;

• properties and availability of explosives;

• blasting geometry;

• detonator availability.

The rock conditions present factors that cannot be altered. \_\_\_\_\_\_\_\_\_\_ can sometimes be enhanced by removing people, or isolating delicate equipment and structures. The surroundings should always be taken carefully into account. Explosives, ignition and blasting geometry are changeable factors.

1. **Translate the text into English and entitle it:**

Метан чрезвычайно взрывоопасен. В местах выброса метана людям запрещается курить и пользоваться факелами, лучинами, керосиновыми лампами, спичками. Он накапливается в пустотах между пород, а такие рукотворные пустоты образует человек во время добычи полезных ископаемых. Однако метан опасен не только взрывами, он ещё и грозит отравлением. При вдыхании метана у человека может развиться кислородное голодание, начаться удушье. Самое тяжёлое отравление сопровождается потерей сознания, побледнением кожи, судорогами и может окончиться летальным исходом. Таким образом, метан одновременно и взрывоопасен, и потенциально ядовит для человека.

1. **Translate the sentences into Russian. Mind the sequence of tenses:**
2. The teacher says that radon is a rare radioactive gas belonging to the noble gas groups.
3. He knew that the chief would take steps to improve safety levels.
4. Alex told me that he had spoken at the conference on diamond mining industry.
5. A job foreman tells us that we should remove the generated nitrogen oxide with the help of ventilation.
6. Knowing that the work in the mines is dangerous, he chose another occupation.
7. He said that he would sign the documents the following day.
8. He said that the miners had been injured as a result of cave-in in a mine.
9. The teacher explained that Carbon Monoxide caused respiratory illness.
10. She said that she would stay in town the next day to take part in the geophysical expedition.
11. My friend told me that he had been working in an open pit for a year.
12. **Translate the sentences into English. Mind the sequence of tenses:**
13. Иван говорит, что интересуется гидравликой.
14. Она думала, что Василий окончил Московский горный университет в 1998 году.
15. Информационное агентство сообщило, что взрыв прогремел на угольной шахте Колумбии.
16. Я знал, что он ответственный за технику безопасности с прошлого года.
17. Петя спросил меня, где я достал спецодежду из джинсы.
18. Анна говорила, что примет участие в международной конференции по вопросам безопасности в шахтах .
19. Начальник отдела сообщил нам, что их фирма ведет переговоры о закупке светоотражающей экипировки для операторов ПДМ.
20. Они сказали, что инструктаж по технике безопасности начнется в 5 часов.
21. Я слышал, что они работают над проектом повышения безопасности уже несколько месяцев.
22. Миша сказал, что он работал на руднике в течение пяти лет.