food we eat, the water we drink, and our health – our internal organs and our lifespan. Soil pollution occurs regularly through the disposal of waste in the ground, and not only by enterprises, but also by ordinary people.

It is no exaggeration to say that the planet is our mother. It feeds us, gives us water, dresses us, and gives us comfort. But taking advantage of all these benefits, humanity not only does not take care of its main treasure, but also ruins it. Today there are many international organizations advocating for the prevention of environmental pollution and aimed at solving many problems. There are many ways to solve this problem, but it is necessary to understand that these methods do not work within a narrow framework. Dealing with environmental problems is necessary for all enterprises throughout the world.

The fate of our planet and our future generations depends on the present generation.

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ENVIRONMENTAL HAZARDS OF LITHIUM BATTERIES

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Nowadays, all countries operate powerful factories for the production of lithium-ion batteries for various needs. In the first place, they can be found in flashlights, phones and even cameras, but the advance of new technologies has reached the introduction of lithium-ion batteries in cars [1].

The purpose of this article is to research environmental hazards of lithium batteries and to compare them with the hazards from conventional battery types. The first comparison is of lithium-ion batteries with internal combustion engines, what danger they would pose in comparison with electric cars.

Statistically speaking, the emission of gases from internal combustion engine cars is harmful enough to endanger the outside world. Nevertheless, there is one disregarded problem. The production of batteries with lithium-ion composition will exceed the level of environmental hazard compared to traditional internal combustion engines. It is convenient to consider the harm of the battery to the environment using the example of an electric car for several reasons. Firstly, an electric car uses a huge number of batteries [2]. The impact of thousands of batteries installed in a car is much more revealing than the hazard of a single battery in a smartphone. Secondly, the benefits or harms of green technologies conveniently stand out against the background of traditional cars. Thirdly, the most common models of lithium batteries are most often used in electric vehicles. Next, the process of operating the batteries begins. In the process of driving, an electric car does not emit harmful gases unlike an internal combustion engine, however, these gases are emitted by an electric

power station for the production of electricity. Nevertheless, even in this situation, an electric car will be at least twice as environmentally friendly.

Despite the demand for lithium-ion batteries there are many flaws that globally affect both humans and the environment. In the production of lithium-ion batteries, the manufacturers do not reveal all the nuances, such as spontaneous combustion or explosion. All the mentioned above issues occur right at the time of development: design error, technological flaw, as well as operational support that oversees the distribution of energy in a device, in a car, in a phone. Indeed, the first samples of lithium-ion batteries were not very safe. When operating such a battery, there was a risk of short circuit inside the cells, heating and even fire. This could usually happen at the end of the battery life due to the poor chemical stability of the battery components. The main weakness of lithium-ion batteries in electric vehicles is the use of organic liquid electrolytes which are volatile and flammable when operated at high temperatures [3]. An external force such as a collision can also lead to chemical leakage. Although the efficiency of electric cars is low, the battery is susceptible to self-discharge, taking into account the fact that the load does not affect it. Accordingly, the main problem today is the oversupply of batteries with the end of their life cycle.

It is commonly known that lithium-ion batteries cannot be simply melted down or buried in the ground. As mentioned earlier, in the production of lithium-ion batteries toxic substances are used so ground waste burial practice cannot be implied, much less can they be remelted. In the EU, only 50% of batteries are recycled, unfortunately, no one has yet learned how to properly dispose lithium-ion batteries.

The only option ensuring avoiding environmental problems is to reduce the production of battery blocks, cells, that is, to reduce the size of the battery in the same forklifts or trucks. The difference between lithium-ion and lead-acid batteries is about the same as between a modern electric train and a steam locomotive. The main drawbacks of these batteries are widely known, which they will never get rid of. Firstly, it is the use of lead-acid batteries as an electrolyte of sulfuric acid solution. Due to the pungent smell, explosive gas evolution during charging, the need to add water appears. As a result, a charging room needs to be equipped and the corresponding money sums for maintaining such batteries are to be allotted.

Secondly, there are risks of a significant reduction in service life due to the negligent attitude of the staff. The service life can be seriously reduced because of the lack of control over the level and density of the electrolyte, storage of a discharged battery, discharges below the permissible depth, violations of the temperature exploitation regime, and failure to comply with full charge-discharge cycles. In other words, a lead-acid battery is a rather capricious thing that requires regular supervision. Thirdly, the charging time is long. It takes at least 7.5-8 hours to fully charge a classic acid battery with liquid electrolyte. Faster charging modes are possible, but this cannot be done daily. Fast charging requires high currents, which greatly shortens the life of lead-acid batteries due to especially.

Lithium-ion batteries are many times more expensive than lead-acid ones and there is no point in spending money on them. Indeed, there is a possibility that the explosive development of lithium-ion technology will lead to the emergence of new players in the market and prices may go down. But even at the current price level, it is worth paying attention to this type of battery [4]. Taking into account the service life, it turns out that in many cases ‘cheap’ lead-acid batteries are more expensive to the consumer than modern lithium-ion batteries.

Take, for example, a situation where a company has lots of warehouse equipment but does not have a specialized room for charging conventional lead-acid batteries. In this case, the company owners have to either invest in the construction of a charger or use gel batteries, which have almost no gas emission during the charging process. Many people follow the second option. Lithium-iron-phosphate batteries for electric forklift trucks and other warehouse lifting equipment are confidently gaining popularity over traditional lead-acid batteries. Lead-acid batteries will never get rid of their main disadvantages due to the nature of this outdated technology. Their only advantage is their low purchase cost [5].

To sum up, if batteries are disposed correctly by transferring them to disposal facilities, a significant reducing of harmful substances ingress into the soil will be achieved. Developing two directions is reasonable: modernization of recycling technologies as well as production technology [6]. Thanks to the cutting-edge technologies zero emission of harmful components can be achieved. If manufacturers focuse on invention of more effective technologies that will have the effect of preserving, the risks of harm to the environment are going to be reduced. The invention of a new type of battery can revolutionize not only the automotive industry but also the field of mobile electronics.

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MODERN METHODS OF SEAWATER DESALINATION

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The shortage of fresh water is a real threat for the entire planet. The world knows such ways of solving the problem as transporting icebergs, transferring runoff from high-water rivers, and desalination, but they are not used in all parts of the planet. There is a sufficient amount of enough sea water, mineralized and waste waters and desalination would make it possible to forget about fresh water shortages forever.

In order to implement all possible programs to restore the planet's water resources, it is necessary to use highly efficient desalination technologies. It is worth noting that these technologies must be cost-effective, so that desalination can produce inexpensive water of the same quality as natural fresh water and of the same usefulness to humans.

Desalination is removal of salts from water, preparing it for technological and domestic use. It means separation of water molecules or withdrawal of salt ions from the liquid. By extracting water molecules from the solution, a considerable amount of energy is wasted, because the aggregate state of the solution changes. Extracting salt from the solution does not change its aggregate state, but the energy expenditure is even greater [1].

48% of this water is produced in North Africa and the Middle East, 18.4% in East Asia, 11.9% in North America, 9.2% in Europe as a whole, including 5.7% in Spain.