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PECULIARITIES OF THE CURRENT STATE OF THE ENVIRONMENT FROM THE IMPACT OF WAR

Abstracts: Military actions have a negative impact on the environment, in particular: direct impact of shells and pollution by burnt military equipment completely destroy the ecosystem, mines, exploding and burning non-metallic parts of military equipment, pollute the soil and water with heavy metals and toxic elements, as a result of the destruction of a large number of military equipment, fuel gets into the soil and atmosphere, which causes damage to the environment, artillery and occupation increases the risk of toxic waste emissions from Ukrainian industrial enterprises; the invasion of the Chornobyl nuclear power plant also caused the most serious environmental problems, after the enemies left, a huge number of mines and wires remained in the exclusion zone, the radiation background was exceeded 7.6 times [1].

Bombardment, movement of equipment, explosions of acoustic bombs in the sea and landing of troops during Russian exercises have created local coasts, meadows and estuaries, sunken ships, missile fragments, use of anchors and explosions of ammunition cause damage to underwater groups living on the ocean floor, sinking of warships, aircraft and other military equipment is toxic to marine life and leads to oil spills. Also, the study of the environmental situation shows that now in the zone of active hostilities there are industrial enterprises, in particular nuclear power plants, ports, hazardous waste warehouses (mineral fertilizers, polyurethane foam, paints, fuels and lubricants, etc.), chemical and metallurgical enterprises [2]. The aggressor's invasion of the territory of Ukraine caused a large-scale ecosystem catastrophe, the consequences of which will have to be overcome for years after the victory, so now we need to consider really effective and modern ways to improve the ecological state of the whole Ukraine.

Keywords: environment, danger, pollution, war, environmental problems, invasion, enterprises.

Анотація: Військові дії негативно впливають на навколишнє середовище, зокрема: прямий вплив снарядів та забруднення згорілою військовою технікою повністю руйнують екосистему, міни, вибухають та горять неметалічні частини військової техніки, забруднюють ґрунт та воду важкими речовинами. метали та токсичні елементи, внаслідок знищення великої кількості військової техніки паливо потрапляє в ґрунт та атмосферу, що завдає шкоди навколишньому середовищу, артилерії та окупації підвищує ризик викидів токсичних відходів українських промислових підприємств; вторгнення на Чорнобильську АЕС також спричинило найсерйозніші екологічні проблеми, після відходу ворогів у зоні відчуження залишилася величезна кількість мін і проводів, радіаційний фон був перевищений у 7,6 рази [1].

Бомбардування, переміщення техніки, вибухи акустичних бомб у морі та висадка військ під час російських навчань спричинили локальні узбережжя, луки та лимани, затонулі кораблі, уламки ракет, використання якорів та вибухи боєприпасів завдають шкоди підводним групам, що живуть на дно океану, затоплення військових кораблів, літаків та іншого військового обладнання є токсичним для морського життя та призводить до розливів нафти. Також дослідження екологічної ситуації показує, що зараз у зоні активних бойових дій знаходяться промислові підприємства, зокрема атомні електростанції, порти, склади шкідливих відходів (мінеральних добрив, пінополіуретану, фарб, паливно-мастильних матеріалів тощо), хімічні та металургійні підприємства [2]. Вторгнення агресора на територію України спричинило масштабну екосистемну катастрофу, наслідки якої доведеться долати роками після перемоги, тому вже зараз потрібно розглядати дійсно ефективні та сучасні шляхи покращення екологічного стану всієї території. Україна.

Ключові слова: навколишнє середовище, небезпека, забруднення, війна, екологічні проблеми, вторгнення, підприємства.

On 24 February 2022, Russian troops launched an invasion against Ukraine by land, sea and air, using heavy weapons such as long-range artillery, missiles, warships and military aircraft. The aggression has resulted in significant civilian casualties and damaged the environment and natural heritage of Ukraine.

The main tragedy of the armed conflict lies in its consequences. Today Ukraine suffers significant losses: human, infrastructural, economic losses. The environmental, social and food consequences of the war are usually not given much attention. However, it is worth noting that crimes against the environment have a less noticeable impact, but in the long run will have quite sad and large-scale consequences.

Of all human activities, military actions have the greatest impact on the natural environment, so in the conditions of open hostilities it is necessary to distinguish between direct and indirect consequences and loss of opportunities. Firstly, direct impacts include explosions that destroy the ecosystem. Environmental destruction and noise pollution of residential areas negatively affect the breeding season. In addition, the direct impact of shells and pollution from burnt military equipment completely destroy the ecosystem. Exploding mines, burning non-metallic parts of military equipment pollute soil and water with heavy metals and toxic elements. Not to mention the large amount of metal scrap scattered in forest plantations.

Secondly, indirect consequences of hostilities against the environment come not from fires or shell explosions, but from, for example, power outages in mines that have to pump water. Without electricity, the pumps would not work and the mines would be flooded with toxic and radioactive waste that could seep into the groundwater. After the war, the ecological state of Ukraine may be worse than ever. Especially since a large amount of military equipment was destroyed. The fuel that gets into the soil and the atmosphere damages the environment. Each explosion has the same effect and is a separate chemical reaction. After the explosion, more than 0.5 kg of sulfur remains from the release of "hail" that falls into the soil. And from the contact of sulfur with water, all living things simply burn with sulfuric acid. In addition, after the explosion, many particles penetrate into the atmosphere, polluting not only Ukraine but the whole globe. It is worth noting that during the invasion Russian troops occupied the Chernobyl nuclear power plant. From February 24, 2022, the background of the Chornobyl NPP increased as heavy armored vehicles and other vehicles moved through the contaminated soil, creating radioactive material - dust in the air. On 24-25 February 2022, during the seizure of the Chornobyl Exclusion Zone by Russian troops, the radiation background exceeded the norm by 7.6 times [3].

At the Chernobyl NPP, high-voltage lines that were supposed to power it, for example, to cool spent nuclear fuel in the local storage facility, were damaged. The lack of electricity can lead to an increase in the temperature in the pool and the release of radioactive materials into the environment. It is worth noting that radiation can be carried by wind on the territory of Ukraine, Belarus and other European countries. In addition to the danger of nuclear weapons, artillery and occupation increase the risk of toxic waste emissions from Ukrainian industrial enterprises.

The invasion of the Chernobyl nuclear power plant has caused serious environmental problems: chemical pollution of soil and water, destruction of ecosystems, reduction of biodiversity, which are not so noticeable now, but will have negative consequences in the future. After the enemies have left, a huge number of mines and wires remain in the exclusion zone, which regularly cause forest fires. In addition to the enormous damage to flora and fauna, such fires pose a great risk of increasing the radiation background. The actions of the Russian army not only cause man-made and environmental disasters, but also destroy the habitats of rare species of organisms that are now endangered.

Since February 24, 2022, the Center for Environmental Initiatives «Ecodia» has been monitoring cases of potential environmental damage caused by the Russian invasion. The purpose of their activities is to report on the potential impact of the war on the environment and the population of Ukraine and to help the Ukrainian authorities collect facts that will be used in the future to obtain compensation from the occupying state. Crimes against the environment are also part of war crimes. According to the Geneva Convention, it is prohibited to use methods or means of warfare intended to cause widespread, prolonged and severe damage to the natural environment. The study of the environmental situation shows that industrial enterprises, in particular nuclear power plants, ports, hazardous waste warehouses (mineral fertilizers, polyurethane foam, paints, fuels and lubricants, etc.), chemical and metallurgical enterprises are currently in the area of active hostilities. Fires were recorded at oil depots, gas stations and landfills, there are facts of damage to heat and water supply facilities (sewage pumping stations, filter stations, water pumps) [3]. A fully realistic assessment of the damage will be possible after the end of active hostilities, and Ukrainians will feel the consequences years later. Active hostilities at sea and on Russian warships, which are now permanently deployed in the northwestern part of the Black Sea, not only block Ukrainian ports, but also put the world at risk of global famine. They can cause man-made disasters and seriously affect the ecosystems of the Black and Azov Seas. The Black Sea Biosphere Reserve, Azov-Sivash, Zalir-Gatsky, Meotida and other national parks are, in fact, the territory of hostility and humanitarian crisis. Often their functions cannot be performed

both to protect rare species and to ensure the safety of employees. Many protected areas were also affected by the fire. This spring there were 45 times more fires in Ukraine than last year. For example, in May, the protected Kimber Spit of the Black Sea, where a unique seaside settlement was preserved, burned down. The fire could not be extinguished due to the occupation and minefields.

Bombing, movement of equipment, explosions of acoustic bombs at sea and landings during Russian exercises have distorted local coasts, meadows and estuaries. Underwater marine ecosystems are also affected by military activities. Shipwrecks and missile debris, the use of anchors and munitions explosions can harm underwater groups living on the ocean floor. Shipwrecks can form new habitats and artificial reefs where aquatic organisms can colonize, but the long-term damage from sunken mechanical pollution far outweighs the potential benefits. The wrecks of warships, aircraft and other military equipment are toxic to marine life and can lead to oil spills that can contaminate the marine environment for decades. Today, as a result of the war of the occupying state against Ukraine, about 900 protected areas with an area of 1.2 million hectares, which is about a third of all protected areas of our country, are in danger.

Despite the long-term adverse effects, environmental problems are an important issue during military operations. Of all human activities, war has the greatest impact on the environment. In addition, since the beginning of the large-scale invasion of the occupying power in Ukraine, more than 240 environmental crimes have been recorded. Such behavior negatively affects ecosystems not only in our country but also around the world [4].

Thus, it can be stated that in the midst of hostilities it is difficult to know the true scale, state of the environment and the level of its pollution. After the end of active hostilities, an own assessment will take place, so now it is important to record crimes against the environment in order to be able to judge the aggressor. It has been determined that Russia's invasion of Ukraine has caused a large-scale ecosystem disaster, the consequences of which will have to be overcome for years after the victory. Given the scale of damage caused to our environment, our scientists and authorities should already consider effective and modern ways to improve the ecological state of the whole country, especially cities.

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