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ENVIRONMENTAL HAZARDS AND FACTORS AFFECTING THE ENVIRONMENT DURING THE COVID-19 PANDEMIC

Abstract. The Covid-19 pandemic changed humanity forever. Every day we wonder what elements of life have changed the most. One of the most important aspects is the impact of a pandemic on the environment and our entire surroundings. The aim of the work is to make a preliminary assessment and review of the literature devoted to this issue. Although the scope of the problem is far beyond the scope of this work, any analysis seems valuable. The work presents positive and negative effects, allowing the reader to interpret the facts on their own.

According to the European concept of a circular economy, used plastic, like some other waste, should be treatedas a resource, the circulation of which in the product life cycle should be kept as long as possible. And one of the goals of last year's directive on reducing the environmental impact of certain plastic products is to reduce the amount of plastic waste in the marine environment, especially single-use products, which are estimated to account for around 80% of waste. The purpose of this study is to assess the climate change impact of increased amounts of single-use personal protective equipment (PPE) waste [1,2].

As a result of the fight against COVID-19, the amount of medical waste is growing rapidly around the world,posing a serious threat to public health and the environment. Much infectious and biomedical waste is generated

for the purpose of sampling suspected COVID-19 patients, diagnosis, treatment of huge numbers of patients and disinfection purposes from hospitals. The problem is compounded by unclear criteria for assessing the possible re-suitability of many other rainfalls, mainly those generated by hospitals. Needles, syringes, bandages, masks, gloves, used handkerchiefs, instead of being subject to some disposal strategy, often end up in the surrounding forests, rivers and oceans. The increase in municipal waste generation has direct and indirect environmental impacts, such as air, water and soil pollution. The aforementioned policy of insulation and work from home, apart from positive effects, unfortunately led to an increase in the demand for online shopping with home delivery, which ultimately increases the amount of household waste from packaging shipped. Worse still, many countries have postponed waste recycling efforts to reduce the transmission of viral infections. For example, the United States has restricted recycling programs in many cities (nearly 46%) because the government was concerned about the risk of COVID-19 spreading in recycling facilities. Similar controversial decisions were made by the authorities of Great Britain, France and Italy, which literally forbade residents from sorting waste. Due to the disruption of routine municipal waste management, recovery and recycling of waste, landfilling and environmental pollution are increasing worldwide [2,3].

In 2019, approximately 12.8 million Mg of municipal waste was generated in Poland, and about 114 million Mg of industrial waste. In terms of medical waste, the forecast of the National Waste Management Plan indicates 47 thousand. Mg / year, however, the COVID-19 pandemic caused an increase in the amount of this waste by approx. 50%. Annually, before the COVID-19 pandemic, Poland produced an average of approx. 79 thousand tons of medical waste. In 2020, it was already about 115 thousand. Tone. In order for medical personnel to use personal protective equipment, e.g. masks, coveralls, gloves or goggles was effective, they have to be changed several or even several times a day. Dangerous epidemiologically are also, inter alia, food debris from covid troops. This waste, improperly collected, stored and disposed of, may become the nucleus of further outbreaks of epidemics. There are 17 installations for neutralizing medical waste in Poznań, Poland. The available data on temporary hospitals show that there is a clearly noticeable increase in the production of infectious medical waste per 1 covid bed, from 2.5 to 3 kg per day. In normal situations, it was about 0.9 kg per day. The biggest problem in the time of the pandemic is not so much weight as volume of medical waste. All used personal protective equipment is large in volume, hence problems with their storage, repackaging, packing and transport [3,4].

Increase in the amount of medical waste production

Since the COVID-19 outbreak, the amount of waste has increased worldwide, posing a serious threat to public health and the environment. It is estimated that roughly the Wuhan region of China itself produced more than 240 tons of medical waste each day after an outbreak, almost 200 million tons more than during normal times. According to the portal "WASTE 360" and the Asian Development Bank (ADB) in Wuhan, before the COVID-19 pandemic, the daily "production" of medical waste in Wuhan was 45 tons, while at its peak - 247 tons, which is almost six times more. In Ahmedabad, India, the amount of medical waste generated increased from 550-600 kg per day to around 1,000 kg. Slightly smaller but still gigantic amounts are produced daily in Dhaka, Manila, Kuala Lumpur, Hanoi and Bangkok. Such a rapid increase in the amount of hazardous waste and its proper management has become a great challenge for local authorities dealing with waste management. The amount of waste is also growing due to the increased use of personal protective equipment. The lack of appropriate guidelines for the proper management of disposable personal protective equipment has become the cause of increased pollution of water reservoirs and a potential source of microplastics spread. Polypropylene is most often used for the production of disposable masks, protective coveralls or gloves. The decomposition time of these compounds is very long, which makes them a source of emission of harmful compounds such as e.g. dioxins [2,4].

Due to the "lock down" during the pandemic, there has been an increase in demand for online shopping for home delivery in many countries, which ultimately increases the amount of household waste. In addition, it changed the form of waste, including there was an increase in the amount of biodegradable waste generated by households. For example, Great Britain and Italy have introduced a ban on sorting waste from quarantined households. This action disrupted the routine waste management, including recovery and recycling of waste, including recovery and recycling of waste. In Poland, the rules for dealing with waste generated during COVID-19 are regulated by the guidelines of the Minister of Climate and the Chief Sanitary Inspector. According to general guidelines, waste from preventive measures in the form of masks or gloves used at work or while shopping by healthy people should be disposed of as mixed waste. Quarantined persons should place the above preventive measures in additional

bags, and then, after binding, also throw them into mixed waste. The most restrictive standards apply to people in isolation, whose waste should be placed in double bags and transferred to designated containers [4].

There are many relationships between the Covid-19 pandemic and the environment. The first, relatively surprising example, may be the effects of the excessive use of disinfectants in road, commercial and residential areas to exterminate the SARS-CoV-2 virus. Such a wide use of disinfectants may kill the target beneficial species, causing an imbalance in the natural environment. The second example is the health of people who are exposed to many threats at any time, including contaminated air and water, noise and chemicals. Cities in Europe are particularly vulnerable to these multiple threats and have less access to green areas and water. Poorer communities tend to be exposed to higher levels of pollution and noise and to high temperatures, and pre-existing health problems make them more vulnerable to environmental health risks[4,5].

Summary

Although the current epidemiological situation is not conducive to many environmental programs aimed at reducing the amount of plastic waste, it is to be hoped that while maintaining the priority of protecting health and life and with the participation of common-sense consumer choices, the fight against the excessive amount of waste plastic leaking into the environment will be successful [6].

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