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The Consumption of Water Resources During Coronavirus Infection Spreading (on the example of Great Britain)

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Abstract

The aim of the work is to study and compare Russian and foreign experience of environmental regulation in the field of water consumption on the example of Great Britain, as well as to borrow the positive experience available in other countries. The research tasks are: a) to study the situation of water consumption in Russia; b) to review the experience of water resources consumption in the UK during the pandemic; c) to analyze the experience of environmental regulation in the countries. The relevance of the proposed topic is due to the present changes in human life due to quarantine restrictions.

Keywords: coronavirus infection, water consumption, pollution, environmental rationing, the Great Britain, analysis, comparison.

Аннотация

Целью работы является изучение и сравнение российского и зарубежного опыта экологического нормирования в сфере водопользования на примере Великобритании, а также заимствование имеющегося в других странах положительного опыта. Задачи исследования: а) изучить ситуацию об использовании воды в России; б) рассмотреть опыт использования водных ресурсов в Великобритании во время пандемии; в) проанализировать опыт экологического нормирования в двух странах. Актуальность темы обусловлена происходящими в жизни человека изменениями в связи с карантинными ограничениями.

Ключевые слова: коронавирусная инфекция, водопользование, загрязнение, экологическое нормирование, Великобритания, анализ, сравнение.

Introduction

The relevance of the topic is due to the present changes in human life due to quarantine restrictions. Currently, these changes have influenced both the daily routine of people and the water amount they consume. Reducing or completely limiting adverse impacts on water resources opens up new opportunities for achieving harmony between society and nature [4].

The purpose of the article is to study and compare the Russian and foreign experience of environmental regulation in the field of water consumption on the example of the Great Britain, as well as borrowing the positive experience from other countries.

In the course of the research, the following tasks were defined:

- to study the situation of water consumption in Russia;
- to review the experience of water resources consumption in the UK during the pandemic;
- to analyze the experience of environmental regulation in the countries.

There are relatively few scientific works devoted to the analysis of environmental regulation in the field of water use in Russia and foreign countries, which, in turn, requires a balance between the interests of water users and maintaining a favorable environmental situation [1; 2].

At the same time, the entry of our country into the Council of Europe, integration into the world community, an increasing mutual exchange of information, including the legal regulation of public relations in the field of environmental protection and rational consumption of water resources, requires the activation of the above-mentioned items aimed at studying foreign environmental regulation in order to borrow the positive experience available in other countries.

The description of the research

The quarantine measures were introduced to stop the spread of coronavirus infection in Russian regions in the same way as in almost every country of the world. As shown by numerous observations, people more often prepared food at home, drank tea and coffee, etc. All this is water consumption.

Especially noticeable was the high consumption of cold water, which was always consumed more than hot water. Thus, due to the coronavirus epidemic, the consumption of tap water has increased significantly.

According to the “Russian Communal Systems” company, in March 2020, water consumption increased by 11.6% compared to the average monthly indicators of previous years. This is evidenced by the preliminary data transmitted by subscribers from measuring devices. Accordingly, a standard for the exchange of electronic data was created in cities.

The expenditures increased among those citizens who paid for hot and cold water by meters. The expenses of the rest were calculated due to usual standards. If before the pandemic people spent about 10 hours outside the home, during the pandemic they were in apartments all day [3].

If in Russia water consumption was growing, then in the UK there was a tendency to decrease the water consumption. This is due to barrels for storing rainwater, increasing water bills, and shifting the most water consumption in the daily routine outside of business hours.

The period from late March to early June 2020 was extremely challenging for water suppliers across the UK. The period of self-isolation caused sudden changes in personal routines, such as: showering, cleaning the house, and tending the gardens.

According to the fact that offices, restaurants and other public places were closed, people, except for the main workers, were advised to stay at home. Companies specializing in water supply to the population tried to balance the work with the existing structure of domestic demand.

It didn't even help in the case that the period under the review was particularly sunny and dry. By the end of May 2020, the daily peak in water consumption was 35% higher than before the pandemic. It fell in the evening, while earlier it reached its maximum around 8 a.m.

From 2019-02-14 to 2020-08-11

Figure 1. Average hourly water consumption in the UK before and during the coronavirus infection spreading (l/hr) [5]

As shown in fig. 1, the water consumption increased most in the evenings, when homeworkers had more free time to spend while cooking, washing dishes, and other activities without going at work places. Those people who worked remotely were more flexible at home, not deciding when they needed, for example, to get up and take a shower.

Thus, water consumption did not increase on weekday mornings as usual. The morning peak shifted from nine to ten o'clock a.m. So, the overall water consumption was higher during quarantine period.

Water helped to maintain a 'semblance of normalcy' for many people during the isolation. It gave them relative freedom, the ability to take care of their own gardens, thereby relieving boredom and providing opportunities for relaxation. But, for many people, overuse of water meant higher water bills that most of the population could not afford.

Regional management companies have temporarily canceled the accrual of penalties for late payments to support the population during the coronavirus pandemic in Russia. But, despite this, it is necessary to pay utility bills on time, so that later you do not end up with accumulated outstanding bills.

For the UK residents, these significant lifestyle changes during isolation were ultimately mitigated as people staying at home used less water and electricity. Compared to full-time work, the working remotely required fewer social expectations in order to be presentable.

Conclusion

In conclusion it is important to underline that quarantine restrictions have shown how social trends affect water demand. Flexible working conditions encouraged people to shift their most intense daily routine outside of working hours, but the new daily routine has forced many people to use more water in their daily lives.

Summing up the article, we can note that there is a need to develop new methods for the rational water resources consumption as water is one of the main sources of life, which should be protected for contemporary and future generations.

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Production of high-strength ceramics from ash and slag waste

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Abstract

In the analytical part of the article, a review of domestic and foreign experience in the use of ash and slag waste (ASW) of coal-fired power plants in the manufacture of ceramic products was made.

The practical part provides information on the technology of extracting the ash fraction suitable for the manufacture of ceramic products from the dump ash of Primorskaya SDPP. A method for the manufacture of ceramic bricks with a 100% ash and slag waste content is described, some physical characteristics of the products obtained are determined, and the characteristics of the products obtained are compared in accordance with GOST 530-2012.

Keywords: ash and slag waste, recycling, microdispersed fraction, ceramic products, ecology.

Аннотация

В аналитической части статьи произведен обзор отечественного и зарубежного опыта по использованию золошлаковых отходов (ЗШО) угольных электростанций при изготовлении керамических изделий.

В практической части представлены сведения по технологии извлечения из отвальной золы Приморской ГРЭС фракции ЗШО пригодной для изготовления керамических изделий. Описан способ изготовления керамического кирпича со стопроцентным содержанием ЗШО, определены некоторые физические характеристики полученных изделий, проведено сравнение характеристик полученных изделий по ГОСТ 530-2012.

Ключевые слова: золошлаковые отходы, переработка, микродисперсная фракция, керамические изделия, экология.

Around 36% of all electricity in Russia is generated at thermal power plants, most of which use mineral fuel such as coal, shale, peat. As a result, at present about 2 billion tons of ash and slag waste have been accumulated in Russian ash dumps, with 40 million tons more being produced annually, and the level of their utilization is no more than 10%. Therefore, the use of waste from solid fuel combustion is closely related to the issues of environmental pollution [1, 2].