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ВОДА В ХАРЧОВІЙ ПРОМИСЛОВОСТІ

бірник тез доповідей

VII Всеукраїнської науково-практичної

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VII Всеукраїнська науково-практична конференція молодих учених, аспірантів і студентів «Вода в харчовій промисловості»: Збірник тез доповідей VII Всеукраїнської науково-практичної конференції молодих учених, аспірантів і студентів. Одеса: ОНАХТ, 2016. – 220 с.

У збірнику матеріалів конференції наведені матеріали наукових досліджень у сфері використання води на підприємствах харчової галузі, оцінки її якості та можливого впливу на організм людини.

Матеріали призначені для наукових, інженерно-технічних робітників, аспірантів, студентів, спеціалістів цехів та заводів, які працюють в харчовій промисловості та водних господарствах.

Матеріали, занесені до збірника, друкуються за авторськими оригіналами.

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Під загальною редакцією Заслуженого діяча науки і техніки України, д-ра техн. наук, професора Єгорова Б.В.

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полимербетонных дренажей в фильтрах с плавающей загрузкой, является их кольматация суспензией и зёрнами фильтрующей загрузки. Это является задачами последующих исследований.

Выводы:

- изучен опыт работы дренажно-распределительных систем водоочистных фильтров с плавающей загрузкой;

- предложены конструкции дренажей на основе пористого полимербетона, повышающие надёжность работы фильтров и их долговечность.

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QUALITY RESEARCH OF BOTTLED WATER

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Sales and consumption of bottled water have skyrocketed in recent years. Bottled water sales worldwide are continuing to increase

annually far faster than almost any other category of commercial beverage. People buy bottled water for a variety of reasons, including convenience, fashion, and taste. Some buy it once just for the bottle and then refill it from the tap. Some people buy bottled water because they think it is safer than tap water.

Bottled water is a packaged food product sold in individual, sanitary, sealed containers. It is intended solely for human consumption. Consumers have a variety of bottled water choices available to satisfy their particular tastes and price pReferencess. It is sold in many different package sizes, including 3- and 5-liter containers and "on-the go" half-liter, one-liter, and 1.5 liter convenience–size packages. Bottled water must be calorie-free and sugar-free, and it cannot contain artificial sweeteners or additives [1].

Bottled water comes from a variety of sources. A bottler's choice of water source is influenced by regulations, consumer pReferences in the marketplace, and availability or proximity of the preferred source. Sometimes the water we can buy in a bottle is simply tap water from a municipal water system that has been enhanced in some way. In general, water bottlers will first seek a natural source in an effort to position their water as a premium product. Natural water is derived from an approved underground source, such as a protected well or spring, that has been inspected, tested, and found to be safe and sanitary with respect to water quality. Approximately 75 percent of bottled water comes from natural sources. The other 25 percent is derived from municipal water systems [2].

The source of municipal water can be groundwater or natural surface waters, such as lakes, rivers, or glaciers, or human-made impoundments such as reservoirs. Typically, municipal water systems are disinfected or filtered for treatment purposes before reaching consumers. But not all types of bottled water are defined as drinking water. Drinking water refers only to bottled water obtained from an approved source that has undergone a minimal treatment process consisting of filtration and some type of disinfection.

Thus, the Ukrainian Institute of Human Ecology, conducted research of the physical characteristics of 17 samples submitted bottled drinking water. Information on the water as per the manufacturer, indicated on the label is very different. According to the data located on the label it is virtually impossible to conclude whether this water to

drink raw and it quality. So, Table 1 contains the basic parameters which allow determining the quality of bottled drinking water [3].

Table 1- Quality parameters of bottled drinking water

№	Brand name	Fractality	Dissymmetry	pH_0	pH_1	bio galvanic current		Notes
1	2	3	4	5	6	7	8	9
1.	Sofiya Kyivska	-	+	7.57	8.63	60	-	
2.	Prozora	+	+	7.52	8.61	180	+	Dissymmetry fractality
3.	Ordana	-	+	7.79	8.78	130	+	Isotropic weak fractality
4.	San Benedetto	-	+	7.84	8.60	80	-	
5.	Contex	-	+	7.47	8.12	130	+	Weakly mineral
6.	Evian	-	+	7.55	8.41	100	-	Isotropic weak fractality
7.	Panna	-	+	7.79	8.54	80	+	Weakly mineral
8.	Bonaqua	+	-	6.95	8.42	100	+	Symmetric ordered structure
9.	Truskavetska	-	+	7.81	8.40	100	-	
10.	Morshinska	-	-	7.00	8.53	80	+	
11.	Dobra voda	-	+	6.70	8.24	100	+	
12.	Vittal	-	+	7.68	8.42	70	+	
13.	Calipso	-	+	7.76	8.56	90	-	
14.	Dzherelna	-	+	6.42	8.07	100	-	
15.	Bon Boisson	-	+	6.70	8.39	60	-	
16.	Stary Mirgorod	+	+	6.10	8.63	150	+	Dissymmetry fractality
17.	Kuyalnik Simeynaya	+	-	7.64	8.46	120	+	Symmetric fractality

Explanation of the table:

a) Fractality: sign (+) means that the bottled drinking water has an ordered fractal structure; (-) means that the bottled water is just a normal solution.

b) Dissymmetry: (+) means that the tested bottled water has dissymmetry structure. The presence (+) to 1 and 2 columns of the table means that the water is a high quality as bottled drinking water. In this case, the waters "Prozora", "Stary Mirgorod".

c) pH_0 – it is data values of water at baseline. pH_1 – is the value of the same parameter of water after a week. Changing in pH_0 over time indicates that the water "breathes", a natural high-quality drinking water feels the influence of the atmosphere and the energy of the

cosmos. If the pH_0 does not change – it may mean that water has passed a water treatment that is "stabilized" this option.

d) The magnitude of bio-galvanic current (galvanic cell) characterizes the free redox properties of water and is relevant to bottled water own bioenergy. The best indicator of this are the water "Prozora", " Stary Mirgorod", "Ordana", "Contex" (weakly mineral water) and "Kuyalnik Simeyna".

e) The sign (+) means that the water has its own energy, which is fixed by the reaction of mixing the test sample with "High-energy Pi Water".

According to research to the bottled water of the highest quality can be attributed "Prozora", "Stary Mirgorod". To drinking water the first category can be attributed "Ordana", "Evian", "Bonaqua", "Truskavetska", "Morshinska", "Vittal", "Dobra voda", "Kuyalnik Simeynaya".

Sales of bottled water have increased dramatically in the last few years despite the much lower cost of tap water. Consumer demand for refreshing alternative beverages, as well as increasing public concern about health and fitness and greater consumer education about the ingredients in food and beverages, are promoting sales of bottled water. There is a great deal of debate about whether this is due to misinformation about tap water safety, the effects of advertising, or simply consumer pReferencess based on taste or convenience. Much attention is being paid in the recent news to the economic, energy, and environmental costs of making bottles, withdrawing water from the environment, bottling the water, transporting it, advertising it, and recycling or disposing of bottles.

Ironically, despite its cost, users should not assume that the quality of bottled water is adequately protected, regulated, or monitored. Even where regulations exist, bottled water plants typically receive far less scrutiny from inspectors than other food plants or municipal water systems. In many places, bottlers themselves do most sampling and testing, which opens the door to fraud, misreporting, and inadequate protection. Ultimately, the provision of clean water to all will not come from sales of bottled water but from effective actions of communities, governments, and municipal providers to provide a safe and reliable domestic water supply.

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NITRATES REMOVAL FROM WATER DURING ITS SIMULTANEOUS MITIGATION

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Most of waste water from agricultural areas contains excessive concentration of hardness ions and nitrates and such water is considered as the major cause of eutrophication [1]. Thus the aim of our research was water purification from nitrates during it simultaneous mitigation.

For removal nitrates from water which contains hardness ions we used anion exchange resin AV-17-8 in CO_3^{2-} form. During sorption process in this anionite we obtained mitigation water because migration of CO_3^{2-} from anionite to water solution (Fig. 1).

In this case in 20 cm^3 of anionite we obtained 9 dm^3 of mitigated water with hardness less than 3 mg-ekv/dm^3. Water alkalinity is practically unchanged. And 9 dm^3 of water were almost completely purification from nitrates. In such a case the exchange capacity of anionite by nitrate reached 180 – 1900 mg-ekv/dm^3.

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