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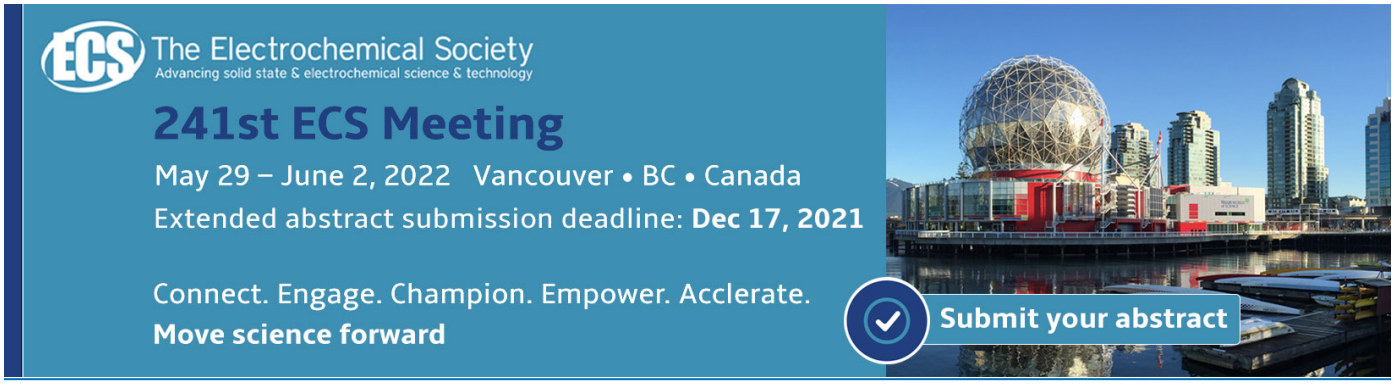

Study on the improvement the quality of drinking water via electrochemical pulse treatment

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Abstract. This article provides information on the ongoing research on the provision of clean and high-quality drinking water, comprehensive development and modernization of drinking water supply and sewerage systems, quality characteristics, physical and chemical composition, and water treatment methods. Initial electrochemical pulse treatment for drinking water is proposed. When water is treated with an electrochemical pulse, the substances become dispersed particles and, due to improved oxidation, reduce the amount of dry matter in the water by 28%, and the oxidation rate increase by 33%, and the hydrogen peroxide ratio by 30%.

1. Introduction

It is well-known that in recent years various measures have been developed and put into practice in our country to improve the welfare of the population. Clean and high-quality population in accordance with the Strategy of Action of the President of the Republic of Uzbekistan on 20 priority directions of further development of the Republic of Uzbekistan from April 20, 2017 to 2017 - 2021 Large-scale water supply reform is underway [1, 2].

Nature never encounters natural water – H_2O, that is, pure water. When it comes to the composition of natural water, of course, gas, liquid and solids can be dissolved in it. So far, it has been revealed that elemental compounds constitute almost half

of the Mendeleev periodic table in natural waters. All types of water components are of two types: insoluble and dissolved. According to the available scientific data, the dissolved compounds in water can be thought to be mainly ions, mineral salts, residues of organic and biogenic substances and gases. There are also many insoluble compounds [3].

Natural water - composition depends on the salts dissolved in it. Depending on the content of salts (degree of mineralization), the waters are classified as follows:

- fresh water with salts up to 1 g / l
- brine, with a saline content of 1 to 25 g / l
- salty with more than 25 g / l of salts

It was also found that the amount of salts dissolved in surface freshwater is 200 mg / l, "average water" is 200-500 mg / l and highly mineralized freshwater (but not drinking water) is 500 - 1000 mg / l, then 1 kg. / l is known. Water hardness is one of the determinants of water quality. Natural water hardness is due to the presence of calcium and magnesium salts in them. It is expressed by the total milliliters of Ca_2Q and Mg_2Q ions in one liter of water. The hardness is divided into three types: temporal, permanent and general [4].

Temporal (carbonate) hardness Qm is mainly expressed in the presence of calcium and magnesium hydrocarbonates $Ca(NSO_3)_2$ and $Mg(HCO_3)_2$ in water, which, when boiling water, become insoluble salts and precipitate as solid precipitates:

$Ca(HCO_3)_2$^$CaCO_3$+CO_2+ H_2O $Mg(HC0_3)_2$^$MgC0_3$+CO_2+H_2O

Calcium and magnesium chlorides, sulfates and nitrate are continuously detected in the Qd channel, which are dissolved in the solution even when boiled. Swinging is called the "general severity" of temporary and permanent rigging.

Natural channels general thickness of the sculpture: jasmine (Qu <2); The median (Qu = 2^10) and the solid (Qu>10) divide into channels [5].

2. Methods

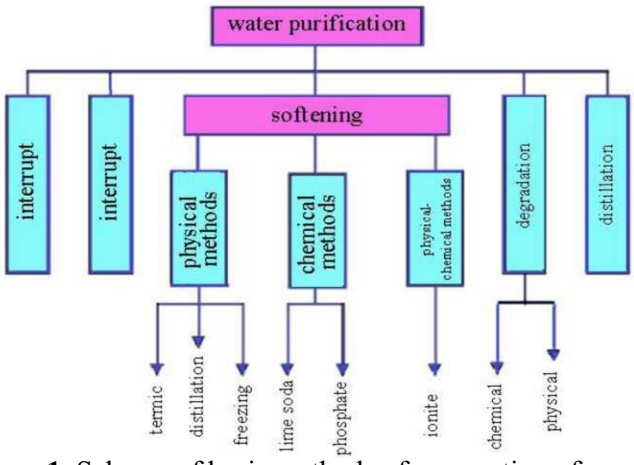

Figure 1. Scheme of basic methods of preparation of canvas

In order to provide fresh drinking liquor to the population, several effective methods of purification of drinking saline have so far been used and practiced. Mechanical, physical, chemical and physical- chemical methods are used in the preparation of alcoholic saline: search, irradiation, ion exchange, siliconization, and degassing. In the preparation of liquor souvenir, the method of cleansing, disinfection cab is also used. The diagram in Figure 1 outlines the basic techniques for preparing a channel.

There are a lot of advanced methods of preparation and can be divided into four main classes:

- thermometer;
- with the help of all oxidizers;
- olagodynamics (the influence of rare metal ions);
- Physical (ultrasonic assist, radiation, ultraviolet light) help).

The second most commonly used of the methods listed above are group methods.

As oxidants, chlorine, ozone, chlorine are used two oxides, iodine, potassium sour manganese, hydrogen peroxide, sodium hypochlorite and calcium. In turn, the listed oxidants are given more attention in practice to chlorine, ozone and sodium hypochlorite. When choosing water treatment methods, attention is paid to the quality and quantity of water being treated, primary water purification efficiency [6].

In the practice of water disinfection, many types of methods are used. Their application in our country does not always give the expected effect. Because, if one of them poses a great environmental threat to the environment, the other is not sufficiently reliable in terms of neutralization, and the other is very expensive in terms of cost. For this reason, the development of technologies that are suitable and convenient to use for the structural structure of the waters in our country, their quality indicators, size and procedures for the operation of structures is a topical problem of the present day [7].

Drinking water should be found safe for health from an epidemiological point of view, whether harmless by chemical composition; organoleptic properties should be found only in Pleasant and in a state of safety.

Dry residue: 1 liter of water characterizes the degree of mineralization of the remaining dry residue of water after evaporation dry residue of water should not exceed 1000 mg/l. If the amount of iron exceeds 12 mg/l, it gives an unpleasant astringent taste, in addition to changing the color of the water turbidity. In addition, if there is a large amount of iron in the water, the taste of tea is disturbed putting the washable dirt yellow, which leads to an increase in the number of micro-organisms, associated with iron in the water pipes, as a result of which the intra-pipe becomes narrower. And when the things that stick to the wall of the pipes become stronger, the organoleptic properties of the water in the water conduit deteriorate. The amount of iron in the water of the waterway is 0. Local water supply sources from 3mg/l should not exceed 1mg/l in water [8].

The presence in the composition of drinking water of multiple concentrations of chlorides and sulfates makes the water salty and overdue, disrupts the secretory activity of the stomach. Drinking water should contain no more than 350 mg/l of chlorides [9, 10].

3. Results and Discussion

To improve the quality indicators of drinking water, we want to offer a technology that is convenient in use. When processing drinking water by electrochemical method, the emulsification, extraction and deemulsification properties of electrochemical shock are used. It should be taken into account that the emulsion process is effective when it is extremely close to the razors. The emulsification disappears and an anti-aging process may appear while moving away from the discharge [11, 12].

One of the incredibly valuable features of all electrical equipment is its soundness. The farm can carry out a wide range of agricultural processes, with one electrochemical system and several exchangeable working organs and aggregates [13, 14]. When electrodes are processed, the distances between the electrodes are divided into several environments (Figure 2).

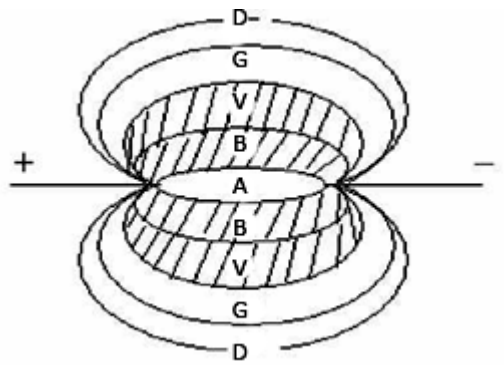

Figure 2. Exposure environments when electroplating is processed: A - a spark discharge forming environment consisting of a stream of plasma between the electrodes; B - a decomposition environment in which all materials are transformed into dispersed particles; V – an environment in which all materials are decomposed, and metals are adherent; G- the release of particles, the appearance of a strong pushing effect, and D - liquids-an environment of elasticity, which keeps itself extremely supple

Figure 3 shows the principal scheme of the electrohydroimpole processing device on the water.

Results of the experiment: in order to check the above-mentioned idea, the primary electrohydroimplated treatment of erosti artizan water in the territory of the Tashkent Institute of irrigation and Agricultural Engineers was carried out. In the

initial experiments, the value of the electrohydroimposed treated discharge voltage was 8 kv, the capacitor capacity was 0.1 mkF, the processing time was 10 seconds. Samples of water from the experiment were examined in the laboratory of the Tashkent regional state sanitary and epidemiological Control Center under the Ministry of health of the Republic of Uzbekistan. The results obtained are presented in Table 1.

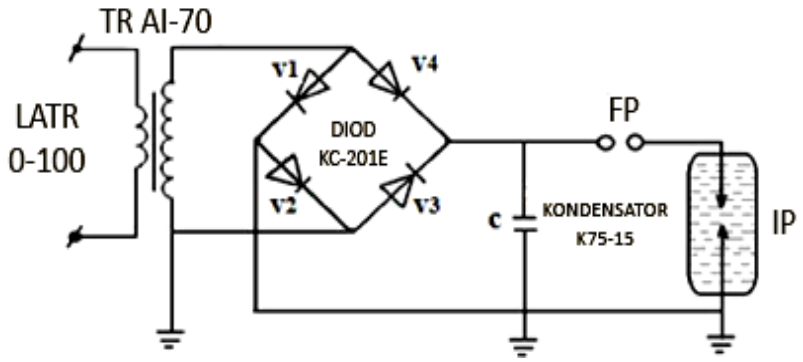

Figure 3. The printsipial scheme of the water electrohydroimpulsion treatment device

The scheme includes a laboratory autotransformator, an AI-70 transformer with an increase in voltage, a KTS-201E high-voltage diode, a K75-15 high-voltage capacitor battery, an FP-discharge range for adjusting voltage.

Table 1. Results of electroimpulsive treatment of drinking water

Drinking water content of components and processes	In untreated water	In treated water	Academic Units of Measurement
RN	7.3	5.1	
Occupationalization	1.8	1.4	mg/dm
Ammonia	0.08	0.04	mg/dm GOST 4192-48
Nitrite	0.00	0.00	mg/dm GOST
Nitrate	27.2	21.1	mg/dm GOST1826-73
Dry residue	1000	782	mg/dm GOST18164-72
Chloride	18	8.2	mg/dm GOST4245-72
Sulfate	480	294	mg/dm GOST4389-72
Flouride	0.81	0.25	mg/dm GOST4386-72

The results of the experiments show that the electrohydro-pulse treatment improves the RN-hydrogen index and oxidation rate in the water.

4. Conclusions

As a result of electrohydro-pulsed treatment to improve water quality, it was found that the RN (hydrogen peroxide value) was changed to 30% and the dry residue was 28%. With the electrohydraulic treatment of the water, we will be able to reduce the amount of dry residues and improve the oxidation rate in a short period of time. Electrohydraulic treatment of water is more convenient, harmless, energy-saving electrotechnology than other methods. It has been established that the chemical composition of water can be altered by the treatment of electrophysical effects on water. It requires a series of experiments to study the effect of this method on bacteria in water.

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