

## ESTIMATION OF THE QUALITY OF THE WASTE WATER EVACUATED FROM IASI AT THE LEVEL OF DANCU PURIFYING STATION

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### **Abstract:**

*The waste water purified at the Purifying Station Dancu-Iasi is deviated in Bahlui River. The quality of waste water purified deviated in Bahlui river influenced the fauna and flora from this aquatic ecosystem. Take into consideration the quality of the waste water purified will establish the field of using, respectively in industry, irrigation, urbanity aims, aquaculture or tourism.*

*The aim of our research consists in the estimation of waste water evacuated from Iasi town at the Purifying Station Dancu. In function of the level of pollution of water established the measures of prevention and combat of pollution respectively the special methods of treatment.*

*The researches were done at the Purifying Station Dancu-Iasi. The preservation of samples realized into a period of three months, respectively March, April and May of 2008, at the beginning of every month. The preservation of the samples realized at the level of the canalization system and at the level of effluent - mechanical and biological steps – in the purifying station.*

*Remaking of samples realized in the laboratory of hydrobiology at the faculty of Animal Sciences, University of Agricultural Sciences and Veterinary Medicine Iasi. We determined the following parameters of water: temperature, pH value, quantity of suspension, alkalinity and the organoleptic properties, respectively color and odor.*

*The results obtained indicated that the waste water evacuated at the level of Iasi town have a high content in biogenic substances and represent a danger for aquatic basins in which it will arrived.*

*Thus, the analyses realized in the months March, April and May 2008 fined inadequate values at the majority parameters of quality of waste water The odor and the taste was at 0degree (class 0 of quality) watter being inodorous; pH value was variable at the scale 7 – 7,3; the values of alkalinity registered values between 6,5 and 7,4 and the temperature presented values between 11 and 19°C.*

**Key words:** water, pollution, inodorous, purified

### **INTRODUCTION**

The researches were done at the Purifying Station Dancu-Iasi. The preservation of samples realized into a period of three months, respectively March, April and May of 2009, at the beginning of every month.

The waste water purified at the Purifying Station Dancu-Iasi is deviated in Bahlui River. The quality of waste water purified deviated in Bahlui river influenced the fauna and flora from this aquatic ecosystem [1,4,7]. Take into consideration the quality of the waste water purified will establish the field of using, respectively in industry, irrigation, urbanity aims, aquaculture or tourism [3,5,6,12].

The aim of our research consists in the estimation of waste water evacuated from Iasi town at the Purifying Station Dancu. In function of the level of pollution of water established the measures of prevention and combat of pollution respectively the special methods of treatment [2,8,10,11].

### **MATERIAL AND METHODS**

The collecting of the samples realized at the level of the canalization system and at the level of effluent - mechanical and biological steps – in the purifying station.

The collecting of samples was done twice per month in March, April and May 2008, at the beginning and the ending of every month,

the researches following to determine: color, temperature, odor, pH value and total quantity of suspension.

Remaking of samples realized in the laboratory of hydrobiology at the faculty of Animal Sciences, University of Agricultural Sciences and Veterinary Medicine Iasi.

For collecting of samples we used recipients from special material which didn't influence the water composition, respectively bottles of glass with special cork. The volume of water which was preserve was enough for a possible new analyze in case of non conclusive results. The analyses were done as soon as possible to avoid the modification of water characteristics.

#### **Determination of total suspension**

The suspension represents the content of the non soluble substances in water which can separate throw filtration, centrifugation and sedimentation.

**Method of work.** 100 ml water filtrated throw filter's paper which was firstly weighing. Then, the filter's a paper put in the drying closet at the temperature of 105°C in time of 1 hour and, after cooling it weighing again.

The mathematical formula is: mg suspensions/l =  $m_2 - m_1 \times 100$ , where:

$m_1$  = initial weight (mg);  $m_2$  = the weight of bottle with the filtered samples (mg); V = the volume of sample's water

#### **Determination of temperature**

The principle's methods consist in the appreciation of the indication of a decimal thermometer after that it was introduced in the water for analyze. The determination of temperature realized after STAS 6324-61. Conformable this method we choose a sample of 2 liters of water from shade' area and determined the temperature after 10 minutes.

#### **Determination of color**

Usually the water has two types of color: an apparent color, determined by the solid suspensions and a real color caused by dissolved substances. The apparent color didn't determine but it disappear throw

centrifugation. The real color determined with comparison with different standard colors (little glass' plates colored). The determination of color can be qualitative and quantitative.

**The qualitative method** consists in the comparison of water's color with the color of distilled water. The sample of water and the distilled water are introduced in two calorimetric tubes and was compared the color, both tubes being in vertical position on a white foundation, and noted the water color in comparison of distilled water.

**The qualitative method** consists in the comparison of the color of water with a calorimetric scale prepared from a solution platinum-cobalt or dichromate-cobalt. The color expressed degrees of color. A degree of color represent the color produced of a solution which contain 1 mg platinum/1 dm<sup>3</sup> as form of ion of chlorine platinum.

#### **Determination of odor**

The principle's method consists in determination of odor at the place of samples' collecting or in housing without another particular odor, being qualitative and quantitative determinations.

For qualitative determination we compare the sample's odor with known odor being necessary a graduated cylinder of 250 ml, glass of watch, vessel with hot water, and thermometer.

The way of work: in a cylinder of 250 ml is inserted approximately 150 ml water, cover with watch glass and after a few movements of rotation of the cylinder is raised watch glass and aspiring the air from cylinder. Se warm air in the cylinder and then covered with watch glass to a temperature of 60°C on water bath after which the aspiring air from cylinder, after removal of glass watch. Scoring smell is comparing it with a familiar smell (aromatic, herbal, mold, hydrogen sulfide, the product, wet wood, smell of bog, smell undefined). Expression quantitative smell is made by the degree of intensity as follows:

Table 1  
 Expression quantitative smell and taste of water

<i>The smell and taste</i>	<i>Intensity</i>	<i>Degree</i>
<i>Without taste and smell</i>	<i>odorless</i>	<i>0</i>
<i>Perceptible fellowship</i>	<i>Very weak</i>	<i>1</i>
<i>Perceptible (usually a consumer)</i>	<i>Weak</i>	<i>2</i>
<i>Not perceptible</i>	<i>Perceptible</i>	<i>3</i>
<i>Sufficiently strong to make the water unpleasant</i>	<i>strong</i>	<i>4</i>
<i>Strong that can not consume</i>	<i>Very strong</i>	<i>5</i>

(after Chifu and colab. 1997)

### Determination of pH value realized with the electronic pH-meter

## RESULTS OBTAINED AND THEIR INTERPRETATION

Waste waters from different economic agents are discharged into the sewage of the city where it is mixed with waste water of city, water with excreta and pluvial water. Waters here are directed toward the cleaning

station Dancu Iasi. Maximum rate of the cleaning station is 500 l/s.

Analysis of temperature (Table 2) that it has between 11 and 19°C with an average of 16°C. Standards, maximum permissible temperature is 32.5°C in water without importance, and maximum 30°C in water with fish importance.

Table 2  
 The values of quality indicators at the purifying station Dancu Iași step organic effluents

Indicators	U.M.	March		April		May	
		01.03.2008	15.03.2008	01.04.2008	15.04.2008	01.05.2008	15.05.112008
Temperature	°C	11	13	15	17	17	19
pH value		7	7,1	7,3	7	7	7,1
Total suspension	mg/l	20	21	27	20	16	15
Alkalinity	mg/l	7,3	7,4	6,7	6,5	6,5	6,8

Temperature affects the quality and activity hidrobionts both directly and indirectly. It is one of most important factors influencing the toxicity of substances.

Increase temperature to 10 °C, within certain limits compatible with life causes a doubling of metabolic intensity and speed of penetration of toxic substances in the body (van Hoff law). Values recorded in the temperature parameter indicate that the waters are not polluted heat.

Following the analysis carried out in March, April and May of 2008 at the purifying station Dancu Iasi, the water treatment plant effluents - biological step has the following characteristics: smell and taste ranged class of 0, being inodorous water, the pH of water presented between 7 and 7.3 (Table 2).

In terms of total particulate matter (Table 2), the results indicate a maximum 27 mg /l in April and a minimum of 15 mg /l in May. Alkalinity (Table 2), presented values between 6.5 mg /l and 7.4 mg /l, the average being 6.9 mg /l.

## CONCLUSIONS

- Values recorded in the temperature indicates that waters are not polluted heat.
- On the pH-values of this indicator shows a very slight alkaline reaction.
- Total value-suspension is very important for characterization of natural waters. According to norm DCS 414/79 permissible limit for total suspension in effluent from waste water treatment station is 25 mg /l. The results show that the filtered water is easily polluted physical with total

suspension, exceeding the maximum allowable of 2 mg /l.

- The smell and the taste were classified as quality class 0, class indicating a water inodorous and good to drink.

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