

# Study of Water Quality that Result after Meat Treatment

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## Abstract

*The following paper consists in the pollution study in the food industry. For this, the following parameters were calculated: water flow rate from both a technological and hygiene point of view, total flow rates; wastewater volumes as a result of technological and sanitary processes. Concentrations of pollutants in water at entrance and exit of the wastewater treatment plant were monitored. Finally was made an evaluation on the achievability degree of the objectives proposed in compliance with the principles of durable development.*

**Key words:** wastewater treatment, effluent characteristics, investment.

## Introduction

Development of food industry in recent years leads to obtain large amounts of wastewater. Efficiency stations waste water industry depends heavily on input water quality, regulated by the norms in force [1,2] therefore breach these conditions lead to insufficient cleaning.

## Experimental

Concentrations of compounds were realized with portable pH-meter; photometer PhotoLabS12; thermo reactor CR 2200; measuring system OxiTop; Merck apparatus. Each composite sample was collected five week and value in paper represent medium per week. Concentrations obtained are presented in figure 1-4. Collected sample process respected SR-ISO 5667 [4,5].

## Results and discussion

Wastewater treatment is carried out in a wastewater treatment plant, operating continuously. Industrial water requirements are 1048 m<sup>3</sup>/day (N<sub>t</sub>). The requirement of industrial water was determined by STAS 1343/1-91 and was calculated with relation (1):

$$Q_{s\text{ tehn}} = K_s \times K_p \times N_{t_i} \quad (1)$$

where  $K_s=1.02$  and  $K_p=1.1$

$$Q_{s\ tehn} = 1,02 \times 1,1 \times 1048\ m^3/day = 1176\ m^3/day$$

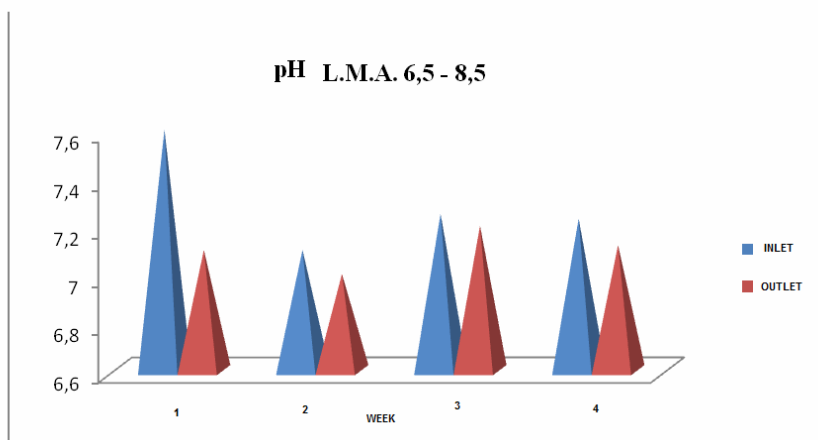


Fig.1. pH

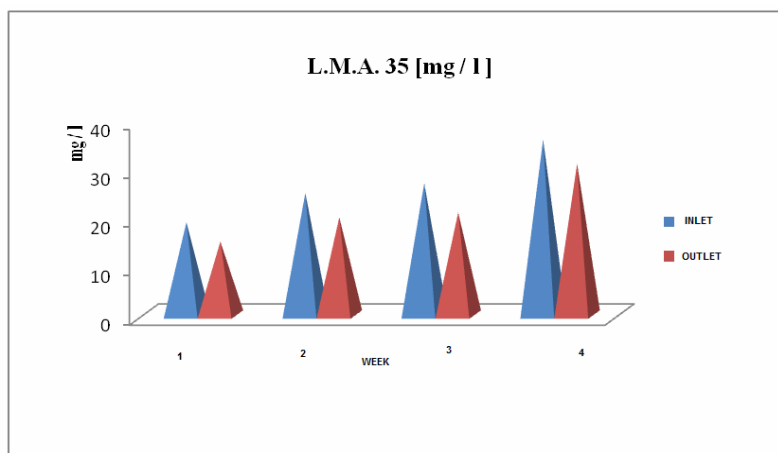


Fig.2. Suspended solids

The average amount of wastewater technology was calculated with relation (2)

$$Q_{s\ zi\ med\ tehn} = (K_s \times K_p \times N) \times 1000/86400 \quad (2)$$

$$Q_{s\ zi\ med\ tehn} = 13,6\ l/s$$

$$Q_{s\ zi\ max\ tehn} = K_{zi} \times (K_s \times K_p \times N) \times 1000/86400 \quad (3)$$

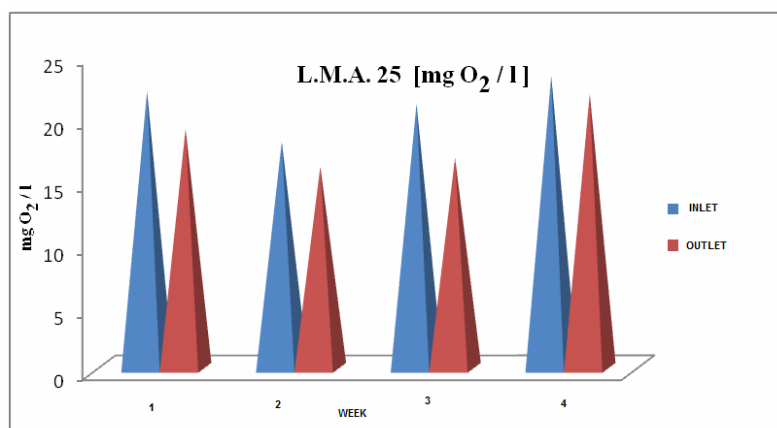
$$Q_{s\ zi\ max\ tehn} = 16,34\ l/s$$

where  $K_{day}$  is unevenness of the flow coefficient daily (1,2).

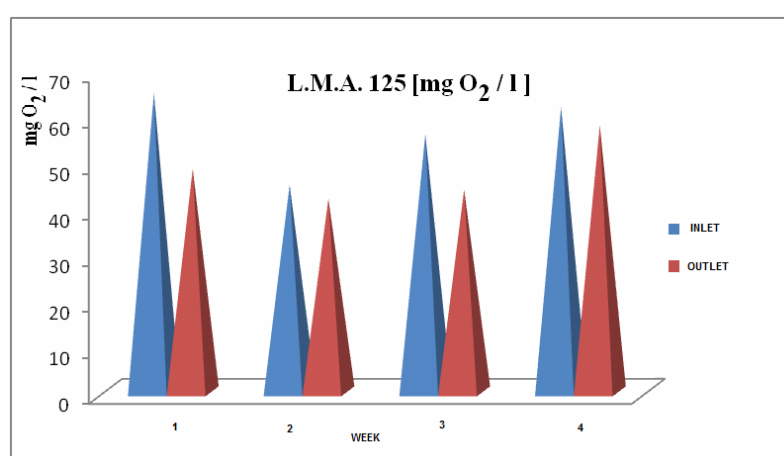
$$Q_{s\ or\ max\ tehn} = K_0 \times Q_{s\ zi\ max\ tehn}$$

$$Q_{s\ or\ max\ tehn} = 36,74\ l/s$$

where  $K_0 = 2,25$  – unevenness of the flow coefficient zone (STAS 1343/1-91).



**Fig.3.** Biochemical oxygen demand (BOD<sub>5</sub>)



**Fig.4.** COD-Cr

As measures to be taken in the near future remember the following:

- ✓ It will implement the environmental management system;
- ✓ It will perform an audit to minimize water consumption, waste and wastewater emissions and waste gases;
- ✓ It will establish rules of operation and functioning, to be specified for each type of risk identified steps to be taken and conduct activities to eliminate pollution;
- ✓ Manual operation of the wastewater treatment plant should be trained and respected by its operators, records characteristic controlled process variables.
- ✓ If the cleaning process inefficiencies, observed by the operator, it must stop the discharge of their re-envoy and upstream from entering the station;
- ✓ To avoid charge separation process is recommended wastewater treatment plants (municipal and technological) and their treatment at source;
- ✓ In order to avoid the occurrence of abnormal operating conditions in cells of smoke and boiling cells, they must be equipped with sensors of gaseous emissions;
- ✓ For sewage sludge resulting from the process needs to be a solution intensified disposal of the company, through a study of its characterization and determining the place of final disposal;
- ✓ For each type of waste generated on site is necessary to identify how to exploit and fixing the duly authorized agents;
- ✓ In the whole site should be located alarm and warning systems;

- ✓ Carry out regular monitoring of all environmental factors (including waste composition) with specialized companies;
- ✓ Preparation of decommissioning plan;
- ✓ Purchase and installation of oil separator for drainage network.

## Conclusions

It was found that the activity of the Wastewater Treatment Plant is not having a bad influence on the environment factors, realizing the proposed objectives for the treatment plant and the environment, OSH and IDPs. At the end of the paper study it made the management recommendations to the Wastewater Treatment Plant administration, the safety instructions, but also the technical security measures.

These objectives for wastewater treatment plant are the following:

- framing monthly water treatment limits
- reducing monthly coagulant
- reducing monthly flocculant
- reduction in monthly operating costs
- reduce sludge disposal costs
- reduce the monthly cost of sewer maintenance.

## References

1. Alekal , P. , Baffrey, R., Franz. A., *Water - Treatment and Sanitation Systems*, Massachusetts Institute of Technology, Cambridge, Massachusetts, 2005.
2. \*\*\* *Chemical Engineering*, Editor McGraw-Hill, p. 339-346, 2002.
3. \*\*\* *Operation of Wastewater Treatment Plants*, vol. I, California State University, Fifth Edition.
4. \*\*\* *M.O. nr. 244/08.10.1996, Legea apelor nr. 107/25.09.1996 modificată și completată cu Legea nr. 310 din 28.06.2004.*
5. \*\*\* *M.O. nr. 187, partea I, 20.03.2002, H.G. nr. 188/28.02.2002, pentru aprobarea unor norme privind condițiile de descărcare în mediul acvatic a apelor uzate – modificată și completată cu H.G, 352/2005 , M.O. nr. 398, partea I, 11.05.*

## Studiul calitatii apei uzate care rezulta dupa tratarea carni

### Rezumat

*In lucrarea de față se studiază aspecte ale poluării datorate industriei alimentare. Pentru aceasta au fost calculate debitele totale de apă tehnologică și de apă de proces. Au fost monitorizate concentrațiile poluanților atât la intrare cât și la ieșire din stația de epurare. In final s-a făcut o evaluare a gradului de atingere a obiectivului propus și anume acela de a epura apa uzată, în conformitate cu principiile dezvoltării durabile.*