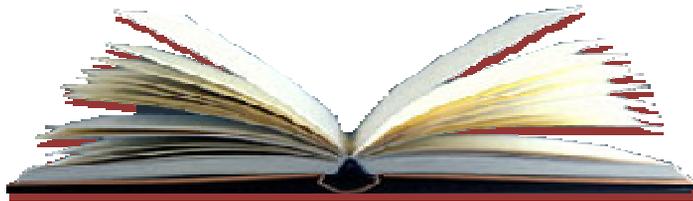




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## **Assessment of the developed formula for determining true sucrose in sugar beet under Egyptian conditions**

By

**Samir Y. El-Sanat<sup>(2)</sup>, Atif Abo -Elwafa<sup>(3)</sup>, Aref A. Aly<sup>(1)</sup>, Mohamed M. El-Tabakh<sup>(4)</sup> and Ibrahim Abdel-Ghane<sup>(4)</sup>**

<sup>(3)</sup> Dean of the Sugar Technology Research Institut, Assuit University, Egypt

<sup>(1)</sup> Chemistry Department, Faculty of Science, Assuit University, Egypt

<sup>(2)</sup> Food Technology Department, Faculty of Agriculture, Kafr El-Sheikh University, Egypt

<sup>(4, 4)</sup> Delta Sugar Company, Egypt.

### **Abstract**

Sugar beet in Egypt is of low quality especially at the end of the campaign. This is due to variation of the climatic conditions and a long time from harvesting to manufacturing. Unfortunately, even small numbers of deteriorated beets affect the process negatively in many ways such as decreasing juice purities, sugar yield, increasing juice colors and the amount of lime used for juice clarification. The main effect is, however on the filtration of the 2<sup>nd</sup> carbonated juice. Presence of oligosaccharides such as glucose, fructose and raffinose in addition to polysaccharides (ex., dextran and levan), which are formed by microbial activity impairs or completely retards the filtration process. This greatly affects the capacity of the whole factory. Otherwise, raffinose and dextran are highly dextrorotatory substances (approximately two and three times higher as dextrorotatory as sucrose). So, their presence affects the polarization for sucrose determination, which may lead to sucrose polarizing over 100°. This apparent sucrose not only causes an error in the sucrose balance of the sugar factory but also increases the sugar loss in molasses leading to reducing the rendement of sugar recovery % of the factory. Moreover, the farmers paid much money on the basis of these miss leading polarimetric readings. Therefore, there is an obvious need for assaying for raffinose and dextran in the core lab. This would allow correction of the falsified reading, but this assaying are very difficult to operate in the routine analysis because it needs more time. So, the objective of this work is to introduce a simple new equation for estimating the true sucrose values of sugar beet based on the Egyptian sugar beet analysis. Consequently, it could be helpful to set up accurate parameters for purchasing sugar beet in sugar factories.

**Keyword:** *Egyptian sugar beet, oligosaccharides, polysaccharides, quality assessment syste*



## **Determination of sucrose losses in beet sugar manufacturing at Dakahlia sugar company, Egypt**

**Omar A. El Shahaby<sup>(1)</sup>, Abdel- Naser A. Zohri<sup>(2)</sup>, Mamdouh A. Mohamed<sup>(1)</sup>, El Sayed E. Hafez<sup>(3)</sup>, Mohammed M. Yousef<sup>(4)</sup>**

<sup>(1)</sup> Faculty of science, Mansoura University, Egypt.

<sup>(2)</sup> Faculty of science, Assiut University, Assiut, Egypt.

<sup>(3)</sup> City for Scientific Research and technology, Alexandria.

<sup>(4)</sup> Dakahlia Sugar Company, Egypt.

*Corresponding Author: Zohri, A. A., email: zohriassiut@yahoo.com*

### **Abstract**

Sixty samples of sugar beets root were collected from different fields of Dakhlia, Alexandria, Kafer el sheakh and Sharkia (15 samples for each) and storage at mild conditions in Dakahlia Sugar Company for 29 days (from 1-29 June 2012). The levels of each of sugar, Na, K,  $\alpha$ N, beet quality and invert sugar were determined every two days of storage period for all samples. As general, there was an increase in each of K%, Na% &  $\alpha$ -N and a decrease in sucrose% at the storage period of 25-29 June 2012 of the beet root collected from the four regions. The beet quality (Qz %) was high at the first periods and decreased gradually, while, invert sugar (INV %) was low at first and increased gradually reached the maximum of decreasing at the end of experimental period.

During sugar manufacturing, the total determined sugar losses (sugar transferred into mud, pulp and molasses) were 2.74% in the first period (1-20/2/2011) of the campaign 2011, while, these total losses were ranged between 2.97 and 4.04% in all the other tested periods in this campaign. Undetermined sugar losses were high (2.2%) in the first period of campaign only and decreased into 0.626- 0.007% in all the other tested periods in the campaign 2011. While, the total determined sugar losses were ranged between 2.288 and 3.168% in the first 10 periods (from 20/2/2012 to 31/5/2012) of campaign 2012 and dramatically increased into 5.347 and 7.454% in the last two periods (from 11/6/2012 to 30/6/2012) of the same campaign. Undetermined sugar losses were 1.474% in the first period of campaign 2012 and decreased to less than 1% in the periods from 2 to 11 in the same campaign. At the last two periods of this campaign (11/6/2012 -



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28/6/2012), an increase of undetermined sugar losses were again recorded. The dramatically increases in total determined and undetermined sugar losses in the last two periods (from 11/6/2012 to 28/6/2012) of the campaign 2012 may be due to the deterioration of beet juice resulting from the increase of microbial load.



## **Development of on-condition monitoring maintenance using logistic engineering**

**A.M. El-Zahaby<sup>1</sup>, A.K. Abdelrahman<sup>2</sup>, M.M. Bassuny<sup>3</sup>, A.A. Ghali<sup>4</sup>**

<sup>1</sup>) **Mechanical Power Engineering Department, Faculty of Engineering, Tanta University, Tanta, Egypt, *e-mail: elzahaby47@gmail.com***

<sup>2</sup>) **Mechanical Power Engineering Department, Faculty of Engineering, Assiut University, Tanta, Egypt, *e-mail: nada\_ali54@hotmail.com***

<sup>3</sup>) **Mechanical Power Engineering Department, Faculty of Engineering, Tanta University, Tanta, Egypt, *e-mail: mahgoub.m@hotmail.com***

<sup>4</sup>) **Logistics, Maintenance Mechanical Engineer, Delta Sugar Company, Kafrelsheikh, Egypt, *E-mail: alyghalydsc@yahoo.com***

### **Abstract**

Rotating machines such as pumps and fans produces some variables such as vibration, noise and thermal loss as by product of transmitted force through the various mechanisms in mechanical malfunction, this paper describes how the on condition monitoring with logistic engineering through actual measurement of machines using vibration analysis software package system (Ascent level 1, 2011) and a computer program MATLAB package system established for analysis and Provide combination monitoring of vibration, lubrication, temperature and noise techniques which are implemented in the measurements. The results are utilized in order to assess the condition health of any point at machine measured with time. Making data fusion helps in detection and

prediction of faults of rotating machine at the early stages which produce high efficiency of fault detection during condition monitoring which refer to decrease failure rate (FR) of machine by 20% and proves to be beneficial in terms increased availability of machine and make a true decision in solving problems of machine malfunction. The results increase the efficiency of early fault diagnosis of rotating machinery which reduced down time of machine problem.

**keywords:** Condition monitoring, Data mixed, Early fault diagnosis, Logistic engineer, Rotating machinery



## **Seasonal variation of physicochemical parameters of wastes from drinking water purification plants, Sohag (Egypt)**

**M.M.M. Abdel-Wahab<sup>1</sup>, A.A. Mohammed<sup>2</sup>, S. El-Tawel<sup>3</sup>, and S.M. Mustafa<sup>4</sup>**

<sup>1</sup> Assiut University, Faculty of Science, Chemistry Department

<sup>2</sup> Assiut University, Faculty of Engineering, Civil Eng. Department

<sup>3</sup> Assiut University, Faculty of Engineering, Civil Eng. Department

<sup>4</sup> Sohag governorate, holding company for water and wastewater. <sup>†</sup>

### **Abstract**

A water treatment plant not only produces drinking water but is also a wastes generator. Liquid wastes are derived from backwash operations. Solid wastes are derived from suspended and dissolved solids in the raw water, the addition of chemicals and chemical reactions. The direct discharge of the wastes causes harmful effects to water bodies. This study was designed to obtain and update information on all types of wastes generated by water treatment facilities in Sohag governorate. Physicochemical parameters for both watery and solid sludge (wastes) of drinking water plant are seasonally evaluated. From the results of watery sludge of west Sohage treatment plants, it is observed that some sludge characteristics exceed the Egyptian permissible limits for water that discharged to the river Nile. The results indicated that solid wastes may contain high concentration of dissolved elements so characterization of waste is an important step prior to determining its disposal options.

***Key words: water purification, wastes, physicochemical, seasonal variation, WTRs.***



## A Study on the air quality from sugar industry in Upper-Egypt

Thabet A. Mohamed<sup>a</sup>, Mohamed Abuel Kassem Mohamed<sup>b</sup>, Mahmoud A. Ghandour<sup>c</sup>, Kato, S<sup>d</sup>

a. ph.D. Environmental Engineering, Sugar Technology Research Institute, Assiut University.

b. Prof. Mining & Metallurgical Eng. , Faculty of Engineering - Assiut University.

c. Prof. Analytical Chemistry, Chemistry Dept., Faculty of Science-Assiut University

d. Prof. Institute of Industrial Science (IIS), University of Tokyo, Japan

### Article Outline

1. Introduction
2. Materials and methods
  - 2.1. Experimental site
  - 2.2. Collection and preparation of samples
  - 2.3. Statistical analysis
3. Results
4. Discussion
5. Conclusion
6. References

### Abstract

Air quality was studied in Gerga sugar factory in upper Egypt as an example of sugar factories, to assess and evaluate pollution levels that are generating from sugar manufacturing process. Pollution levels of NO<sub>x</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub> and THC gasses and suspended particulate matter were measured (PM<sub>10</sub> and PM<sub>2.5</sub>). Also, Meteorological factors in terms of wind speed and direction, temperature and pressure were evaluated. Mobile laboratory monitoring unit with rapid response instruments was used for real-time measurements of gases and particulate matter. The results showed that air quality in Gerga sugar factory is harmful due to both total hydrocarbons and sulfur dioxide gases that are exceeded the acceptable levels. In addition, it is noticed that the worst pollution problem due to the emission of particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) was found in the core of the sugar factory and neighboring residential area.

**Key words:** *Air quality, gaseous pollution, suspended particles, PM<sub>10</sub>; PM<sub>2.5</sub>; Sugar industry, Emission measurement;*



## **Evaluation of heat stress on workers of bakery at Assiut City, Egypt**

**Thabet, A., Mohamed**

**Ph. D. Environmental Engineering, National Institute of Occupational Safety and Health, Egypt**

### **Abstract**

The paper investigates the heat stress among employees engaged in bakeries in Assiut city, Egypt. Heat stress is one of the occupational hazards that pose impacts on workers in workplace such as heat stroke, heat exhaustion, heat cramps, heat rashes and heat fatigue. 100 subjects were chosen randomly from 20 bakery stations to testify heat stress impacts. Heat stress level was determined by Wet Bulb Globe Temperature Index (WBGT) to evaluate the environmental factors whereas Physiological Strain Index (PSI) used to ascertain the heat strain through determination of heart rate and core temperature. Results obtained from WBGT index measurements showed that the average value of heat stress in bakeries work environment reached ( $31.6^{\circ}\text{C}$ ), exceeding the Threshold Limit Value (TLV)  $25^{\circ}\text{C}$  and Action limit  $28^{\circ}\text{C}$  as recommended by the ISO 7243 and ACGIH Standard respectively. PSI values fall in the range of  $200 < M < 260$  stated by ISO 9886 indicating that workload in bakery environment lie in the moderate class. Modernization of traditional baking ovens to reduce the radiant heat is essential. Application of control measures such as engineering, administrative, periodical medical examination and use of the personnel protective equipment, this can limit of negative effects on bakery workers.

***Keywords: Heat stress, WBGT index, PSI index, bakeries, Assiut city***

***thabet900@yahoo.com Corresponding author:***

***Tell (cell): + 01069867737***



## **Environmental impacts from poultry feeding plant, Al Safa (Bani Ghalb) industrial zone, Assiut, Egypt**

**Thabet A. Mohamed<sup>(1)</sup>, Atif Abo- ELWafa<sup>(2)</sup>, Thabet Abdel Monaem<sup>(3)</sup>**

**(1) Ph.D Environmental Engineering, National Institute of Occupational Safety and Health (NIOSH)**

**(2) Dean of Sugar Technology Research Institute, Assiut University**

**(3) General Manager of AUCES, Assiut University**

### **Abstract**

An environmental assessment of workplaces was performed in poultry feeding plant western –south of Assiut city, Egypt. Poultry plays a pivotal role in bridging the protein gap of animal origin in most countries of the world. The most effective environmental hazards that emanated from poultry feed are vaccination programs, the use of antibiotic, anticoccidials, arsenicals and mycotoxins. Due to indiscriminate use and unawareness of withdrawal periods of drugs, the treated birds (broilers) are known to possess their residues in meat. Such meat is undoubtedly unfit for human consumption and poses serious threat to consumer's health. The paper describes the environmental impacts of poultry feed and some work environment parameters that pose risk to workers in workplaces. Obtained results showed that noise levels in poultry feed plant exceeded the threshold limit value (TLV) and the organic dust was higher than allowable levels stated by labor law 12/ 2003.

***Keywords: environmental assessment, poultry feed plant, antibiotic, mycotoxin, noise, organic dust***