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Facultatea de Inginerie

NORTH UNIVERSITY CENTRE OF BAIA MARE
Faculty of Engineering

BULETIN ŞTIINŢIFIC
AL CENTRULUI UNIVERSITAR NORD DIN BAIA MARE

SERIA D

Exploatări Miniere

Prepararea Substanţelor Minerale Utile

Metalurgie Neferoasă

Geologie şi Ingineria Mediului

Volumul XXXIV Nr. 2

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Times New Roman font, single spacing.
4. Paper's title will be written with capital letters 14pts, bold, centered. Authors will be written with 12pts, bold, italic, centered. Affiliation will be written with 12pts, italic, centered. Abstract and keywords with 10pts, italic, justify. After title, affiliation, abstract, keywords leave one line space. Before and after each subtitle leave one line space. Paper text will be written with 12pts, justify, figures/tables included in the text. References will be listed with 10pts.

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CONSIDERATIONS FOR THE 246/2020 LAW, REGARDING SOIL USE, CONSERVATION AND PROTECTION (I)

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Abstract: *Certainly, the appearance of a new law in a field arouses interest from those concerned especially specialist and, legislators. Particularly if it is the first law in that field. We propose in this paper, and if possible, in a series of papers, "to dissect Law 246/2020", a law in the field of pedology but with application not only for the correct use of the soil but especially for its conservation and protection. It is therefore an integrated, soil-environment law. In this paper we analyze the terms and expressions used in the law, along with their meaning. Some of them are already established but do acquire new valences while others undergo transformations or are germs for new expressions. The recognition of a need for a Scientific Committee regarding the elaboration of the application norms and of some auxiliary guides with the role of guidance, supervision, etc. denotes the recognition of the complexity of the regulated activity.*

Key words*: soil, law, environmental protection.*

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MODELLING THE WASTE DISPOSAL DEPOSIT – (PART IV)

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Abstract: This paper is part IV and a continuation of the scientific research conducted on the modeling and simulation of the state of induced stresses on a municipal landfill. The ***geometry*** *of the proposed WASTE DISPOSAL DEPOSIT, the initial principal stresses, in the body of the warehouse and the stability calculations performed on them are presented.*

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STUDIES ON THE DETERMINATION OF PH/EC/TDS LEVELS IN THE GUTÂI MOUNTAINS DRINKING WATER FROM MARAMUREȘ

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Summary: *The paper showcases research conducted in order to determine pH, EC and TDS levels in the drinking water sampled from a spring located at an altitude of 925 meters at the edge of the DN18 road, which connects Shighetu Marmației and Baia Mare, in Maramureș, Romania. A Tester Combo HI98130 was used for this experiment, a tester which is waterproof, extremely accurate and it can measure high range (0.00 – 20.00 mS/cm, EC/0.00 – 10.00 ppt TDS) EC/TDS and temperature. The results of the experiment are: pH = 7.25, EC = 0.08 mS/cm, TDS = 0.04 ppt at a temperature of 27,6^{0}C. This waterproof floating combined tester comes equipped with an easy to read LCD display and automatic stop. On top of that, pH and EC/TDS readings are automatically compensated by temperature (ATC) in order to prevent temperature related variations when taking measurements.*

Keywords: *Spring water, electric conductivity, total of dissolved solids, chemical analysis.*

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PHYSICO-CHEMICAL AND ECOLOGICAL CHARACTERIZATION OF THE WATERS IN THE WETLANDS OF THE SARASĂU AREA LOCATED IN THE ROSCI AND ROSPA PROTECTED AREA

MONICA MARIAN[1,2], THOMAS DIPPONG[1,2], OANA MARE ROSCA[1,2], MARCEL TÎBÎRNAC[1], SEBASTIAN KATONA PAYER[1], CRISTINA MIHALI[1,2*], ZORICA VOȘGAN[1,2], DAIANA DRULE[2], ALEXANDRA AVRAM[3]

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ABSTRACT: *This paper presents a physico-chemical and ecological characterization of some ponds of anthropogenic origin, resulted from the drilling and extraction of lithological substrate. These artificial water bodies located in a Natura 2000 protected area are the result of some environmental pressures and replaced a potential meadow vegetation. The study aims to characterize the ponds in the perspective of their evaluation as support habitats for fauna and vegetation. For this, some typical physico-chemical parameters of water bodies, important to aquatic life, were analyzed: conductivity, pH, dissolved oxygen, oxygen saturation, turbidity, temperature, ammonium concentrations, nitrate, nitrites, free ammonia, total ammonia, free residual chlorine, total chlorine, phosphates, iron, copper, total alkalinity and water hardness. Also, the types of vegetation and natural habitats were identified and mapped. The analysis of the water quality in the studied area is very important for the conservation and improvement of the natural ecological system.*

Key words: *wet ponds, nitrates, nitrites, oxygenation, protected area, biodiversity*

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CASE STUDY REGARDING THE PREDICTION OF THE LAMINATING FORCE

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Abstract: *Based on the mathematical model existent in the literature, the object of this study is a way to improve and simplify the way that the laminating force is determined. The whole process is realized using a provided rolling mill.*

The mathematical model that determines the laminating force has a theoretical base and it can approximately predict how the laminating force will vary. The relative degree of deformation tells us that de sample suffered an uneven deformation length, width and height wise. After the first lamination, the material loses plasticity and the reduction has to be as follows: higher at first, after which it drops, as the reduction degrees indicate.

We created a probabilistic modelling approach that learns as new data is introduced.

Keywords*: laminating force, mathematical model*

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SEQUENTIAL MONITORING OF DRINKING WATER QUALITY IN THE CITY OF BAIA SPRIE, MARAMUREȘ

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Abstract

This paper presents the analysis of quality indicators for six surface water sources and two subterranean water sources at Baia Sprie, which are meant for domestic use. The period during which water quality was monitored covers three months (January, March and May 2018); during this period the control analyses of water quality were carried out in the laboratory of the Baia Mare Water treatment plant.

The analysis of the results obtained highlighted a series of bacteriological indicators/parameters that were exceeded, as well as turbidity and hardness in the raw water from the catchments. The existence of colonies developed at 37ºC and 22ºC in the water requires a chemical treatment of this raw water with the aim of disinfecting it. The paper contains certain data regarding the need for water and the system for distributing drinkable water to consumers, the description of catchments and the subterranean water treatment technology required for meeting the sanitary conditions for rendering water drinkable, as well as the analysis of physical, chemical and bacteriological indicators obtained, compared to the legislation in force.

The parameters of the thus rendered drinkable water match the values accepted through the legislation in force, the water being distributed to consumers through the Drinkable water distribution system in Baia Sprie.

Keywords*: surface water, subterranean waters, water quality*

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STUDIES ON THE DETERMINATION OF THE TOTAL HARDNESS OF THE DRINKING WATER COMING FROM THE "FÂNTÂNILE RECI" SPRING IN MARAMUREȘ

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***Summary**: The paper showcases research conducted in order to determine the total hardness of the drinking water coming from the „Fântânile Reci" spring, located at the edge of the DN18 road, at the end of the Mara town, in Maramures, Romania. A HI97735 advanced portable photometer was used for this experiment. The photometer can perform low, medium and high range measurements of the total hardness of the water samples. The counter comes equipped with a superior optical system which uses a reference detector and a narrowband interference filter used for extremely quick and repeatable measurements. The values obtained as the result of the experiment are: 204 mg/l $CaCO_3$ (Total Hardness MR), 15,2 ^{0}E, 12,2^{0}dH and 21,7^{0}f. The LED light sources are superior compared to the tungsten lamps. LED lights are more efficient, providing more light while using less energy, and they produce little heat, which could otherwise affect the electrical balance.*

***Keywords:** Photometric analysis, drinking water, spring water, total hardness, chemical analysis.*

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STUDY ON THE VALUE VARIATION OF SOME QUALITATIVE PARAMETERS OF DRINKING WATER

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Abstract

The study presents the variations of the physical, chemical, microbiological and bacteriological parameters for water provided from two water resources intended for potabilisation, for use in domestic consumption and comparing the results with the legislation in force regarding the quality of drinking water. The two water resources intended for potabilisation are represented by the groundwater from the Capture of Crăciunești (Tisa River) from Sighetu Marmației and the second source of water is represented by the Firiza Dam, Baia Mare. For both water resources, the present paper presents the technological processes of treatment in order to obtain potable water, which is then distributed to the population through the drinking water distribution system. The study highlights the situation of the drinking water distribution system to the consumers in the 3 areas, the description of the catchments and the treatment technologies of the different water resources (surface water and groundwater) in order to fulfill the sanitary requirements for drinking water, as well as the results of the analyzes for the values of the physical, chemical, microbiological and bacteriological parameters obtained. The analysis of the results revealed value changes at the microbiological and bacteriological parameters only in the raw water, increased values of the turbidity in the raw water from the Firiza Dam, Baia Mare and increased values of the hardness parameter in the water from the underground resource from Sighetu Marmației.

Keywords: water treatment, qualitative parameters

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