

CENTRUL UNIVERSITAR NORD DIN BAIA MARE
Facultatea de Inginerie

*NORTH UNIVERSITY CENTRE OF BAIA MARE
Faculty of Engineering*

BULETIN ȘTIINȚIFIC

AL CENTRULUI UNIVERSITAR NORD DIN BAIA MARE

SERIA D

Exploatări Miniere

Prepararea Substanțelor Minerale Utile

Metalurgie Neferoasă

Geologie și Ingineria Mediului

Volumul XXX Nr. 2

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OF NORTH UNIVERSITY CENTRE OF BAIA MARE

Series D

Mining

Mineral Processing

Non-ferrous Metallurgy

Geology and Environmental Engineering

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2. Paper includes: title, authors, institution, abstract, keywords, paper content, conclusions and references.
3. Page dimensions A4, top 2cm, down 2cm, left 2,5cm, and right 2cm.
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.

CONTENTS

| | |
|--|-----|
| 1. OUR FUTURE HOUSE IS EKOEUROPE THE SYSTEM OF ECOLOGICAL SECURITY OF THE EUROPEAN UNION, CARPATHIAN EUROREGION AND UKRAINE | |
| <i>O. Adamenko</i> | 7 |
| 2. TRENDS IN THE TECHNIQUES OF DESIGN AND BUILDING TRADITIONAL EARTH HOUSES | |
| <i>B. Cioruța</i> | 21 |
| 3. DETERMINING OPTIMAL SIZE OF SPONGES USED FOR CLEANING WATER DISTRIBUTION NETWORK IN SATU MARE MUNICIPALITY | |
| <i>B. T. Matuz, I. Leitner</i> | 33 |
| 4. PRICE ANALYSIS OF THE COMPONENTS OF WATER SUPPLY SYSTEMS | |
| <i>I. Leitner, B. Matuz, T. Dippong</i> | 45 |
| 5. THE INFLUENCE OF IRON CONTENT FROM WATER ON PIPES CLOGGING IN WATER NETWORK OF SATU MARE CITY, NW OF ROMANIA | |
| <i>B. T. Matuz, I. Leitner, C. Mihali, T. Dippong</i> | 57 |
| 6. METALLURGICAL PROCESSES GAS EMISSIONS AND THE GREENHOUSE EFFECT | |
| <i>V. Hotea</i> | 67 |
| 7. THEORETICAL BASIS OF CONSTRUCTIVE ECOLOGY – THE NEW DIRECTION OF EARTH’S SCIENCES | |
| <i>O. Adamenko</i> | 77 |
| 8. THE METHODOLOGY OF THE MICROCLIMATE’S CHANGES EVALUATION WITHIN THE INFLUENCE OF OIL AND GAS FIELDS | |
| <i>K. Radlovska</i> | 93 |
| 9. NEGATIVE CONSEQUENCES OF LONG-TERM OIL AND GAS PRODUCTION ON EXAMPLE OF BORYSLAV OIL FIELD | |
| <i>O. Mandryk, A. Pukish, P. Drygulych, A. Zelmanovych</i> | 101 |
| 10. DETERMINING A MATHEMATICAL MODEL BASED ON EXPERIMENTAL STUDIES | |
| <i>E. Pop, J. Juhasz, I. Smical</i> | 113 |
| 11. PROTECTED NATURAL AREAS IN MARAMUREȘ COUNTY WITH SPECIAL EMPHASIS ON THE GEOLOGICAL ONES (II) | |
| <i>L. Costin (Ardelean)</i> | 123 |
| 12. NATURAL SCIENCE - STUDIES REFLECTED IN THE PRE-UNIVERSITY EDUCATIONAL SYSTEM IN ROMANIA | |
| <i>I. Demuț, A. Sîngeorzan</i> | 133 |
| 13. FROM AFFORDABLE ECO-BUILDINGS TO SUSTAINABLE CITIES (I): CURRENT EXPERIENCES AND FUTURE PERSPECTIVES | |
| <i>L. Muntean, B. Cioruța</i> | 143 |

OUR FUTURE HOUSE IS EKOEUROPE THE SYSTEM OF ECOLOGICAL SECURITY OF THE EUROPEAN UNION, CARPATHIAN EUROREGION AND UKRAINE

OLEG ADAMENKO

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***Abstract.** In the given article author provide study of the ecological state of soil and vegetation, air and surface water at 200 geo-ecological landfills 12 EU countries, Ukraine, Belarus, Russia and the West Moldova made it possible to develop a schematic diagram environmental safety of Central and Eastern Europe.*

***Keywords:** environmental auditing, environmental monitoring, forecasting and modeling of the environment, environmental management, geographic information systems.*

TRENDS IN THE TECHNIQUES OF DESIGN AND BUILDING TRADITIONAL EARTH HOUSES

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***Abstract:** Down through the ages, people have been using raw earth for building their living spaces. Earth as a building material comes in a thousand different compositions, and can be variously processed. Loam or clayey soil, as it is referred to scientifically, has different names when used in various applications, for instance rammed earth, soil blocks, mud bricks or adobe.*

In the present paper we will try to highlight the great variety of forms that clothe lifting technique as the foundation of traditional houses with land, material of construction primordial and most durable shelters. Thus, according to the ecological buildings literature, we analyse the most important aspects concerning the earthen architecture, focusing, in particular, on the soil suitability according to the techniques involved.

***Key words:** earth building, traditional architecture, sustainable development*

DETERMINING OPTIMAL SIZE OF SPONGES USED FOR CLEANING WATER DISTRIBUTION NETWORK IN SATU MARE MUNICIPALITY

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***Abstract:** This paper presents an original study on determining the optimal material and size for sponges used in cleaning the water distribution network in Satu Mare municipality. Two different types of cylindrical shaped polyurethane sponges (a simple sponge and a waterproof coated one) were tested in order to determine the efficacy of the cleaning process. The study was conducted on 100 mm diameter asbestos-cement pipes, as they represent 58% of the network's pipes. It focused on measuring the minimal (initial) internal sponge diameter that successfully cleans the water distribution network, by taking into account the degree of sponge deformity that appeared while pressures of various intensities were being applied during the cleaning process. The advantages of using waterproof coated sponges rather than simple sponges were analyzed and the water economy was calculated. The field and laboratory measurements demonstrated that, regardless of the pipe material, same size sponges can be used to clean all networks that have the same diameter; the pressure applied to the sponge even allowed for a 20% increase in its minimal diameter, in order to increase the efficacy of the cleaning process.*

***Keywords:** cleaning sponge, water network, wet friction coefficient, clean drinking water*

PRICE ANALYSIS OF THE COMPONENTS OF WATER SUPPLY SYSTEMS

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Abstract: *In order to prepare investment plans in the short and long instrumental in establishing their value is closer to the market prices. Price reduced reference to the acquisition of works of expansion and improvement of the water supply can lead to a reduced number of bidders (even absent), and a high price may have the effect of increasing economies following awards investments, which in the case of European funds unusable to other work, which consequently lead to an absorption rate decreased. In this study on the experiences of previous years' price values are determined by reference to components of water supply systems. They have analyzed the investments in systems of water supply conducted POS-MEDIU projects in the development area north west and values were determined reference prices using functions representing their progress relative to the basic features of the components supply systems with water. In subsequent years the water operators have to spend with caution and use European funds mainly because of affordability limit as long as the population is low does not indicate an increase in tariffs. This paper evaluates the prices of different nominal sizes transmission pipes, distribution networks, water, then calculate unit prices on which is chosen and proposed function with which it will calculate prices for other standard sizes. Value prices for wells, treatment plants, dams, connections, manholes, hydrants, reservoirs were processed and then calculated the unit prices for water supply system components.*

Keywords: *drinking water, business plan, reference prices*

THE INFLUENCE OF IRON CONTENT FROM WATER ON PIPES CLOGGING IN WATER NETWORK OF SATU MARE CITY, NW OF ROMANIA

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Abstract: *In the present paper we studied the variations of the physico-chemical parameters in the municipal network of water distribution during the past 12 years. We assessed the quality of drinking water and compare the values of the parameters to the legal admissible ones. We noticed an improvement of the quality of drinking water after the rehabilitation of the water treatment plant in 2009. We estimated the effect of iron (Fe) content of water on the asbestos cement pipes as well as on the metallic pipes. In addition, we investigated whether the clogging of the pipes can be prevented through maintenance interventions. We studied the forms in which Iron was found in water and its possible transformations by using the correlation between the water iron content and the values of the physico-chemical parameters. Understanding the effects of Iron in water and finding the most effective prevention methods against iron deposition inside pipes is very important for the quality of the water. In addition, we presented several possibilities for removal of the iron deposits on the pipe walls.*

Keywords: *water, iron in water, asbestos cement pipes, metallic pipes, clogging, washing the pipes*

METALLURGICAL PROCESSES GAS EMISSIONS AND THE GREENHOUSE EFFECT

VASILE HOTEA

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Abstract: *In this study, was conducted a current state of the sources of greenhouse gases, emission by the Industrial Sector and the Metallurgical Processes Industry and a process-based LCA has been performed for the pyro-lead metallurgical process based on non-ferrous metallurgical plant in Maramures County (Romania). The purpose of this study is to highlight areas of the lead and copper metallurgical process, which contributes most significantly to potential environmental impacts, there by identify the areas of potential improvement, and eventually provide a scientific basis for the improvement on resource and energy use as well as in emission control and to ultimately implement its clean production for lead metallurgical processes. Massive reductions in greenhouse gas emissions should stabilize climate risk and avoid catastrophe. Life cycle assessment (LCA) is a useful and effective tool to address environmental performance and potential impact a product throughout its life cycle. In Maramures county was a reduction in emissions of greenhouse gases as a result of reduced industrial activity in the two-ferrous metallurgical works: Romplumb SA and Cuprom SA Baia Mare.*

Keywords: *Gases, Greenhouse, Pyrometallurgical process, Life Cycle Assessment, Environment.*

THEORETICAL BASIS OF CONSTRUCTIVE ECOLOGY – THE NEW DIRECTION OF EARTH'S SCIENCES

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Abstract: *The constructive environment – is a new scientific field of Earth's Sciences, which not only evaluates the environment, but also offers specific technology protection measures to optimize and improve the environment through the design of natural. Technical systems which are used to change the biosphere, providing sustainable harmonious development of man-nature-technosphere.*

The article considered environmentally and assess the main components of the environment – that are: lithosphere, geophysical fields geomorphosphera, hydro- and atmosphere, soil and vegetation, their changes under the influence of technosphere, the spatial distribution of the main pollutants in connection with landscapes creates qualitatively new formation – the geological structures. It opens the new method – zoning areas based on their different hierarchical levels of industrial enterprises, settlements, united local communities, administrative districts and regions to regions, states Ukraine, Carpathian Euroregion and the European Union that makes it possible to offer unified for all these hierarchical territorial levels computerized constructively-ecological system of environmental safety.

Keywords: *constructive environment, natural and anthropogenic geosystem, environmental risk and safety*

THE METHODOLOGY OF THE MICROCLIMATE'S CHANGES EVALUATION WITHIN THE INFLUENCE OF OIL AND GAS FIELDS

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***Abstract:** The given article deals with the problem of analyzing the previous studies localized within the influence of objects in the oil fields of Western Ukraine. The author shows the principles and analyses of preliminary studies methods of evaluating microclimatic parameters. The paper in question provides the methods that allows to determine the automate change control microclimatic parameters with the help of monitoring and forecasting of microclimate parameters during execution of works within the oil industry facilities. The measurement of microclimate and analysis of the results carried out according to the international standard ISO 14644. To predict the state of microclimate asked to use the methods of interpolation and extrapolation function using cubic splines. In conclusion, the complex model for the microclimatic changes depending on characterized diurnal temperature, which according to the daily maximum temperature and with the relative humidity.*

***Key words:** microclimatic parameters, oil fields, sustainable development*

NEGATIVE CONSEQUENCES OF LONG-TERM OIL AND GAS PRODUCTION ON EXAMPLE OF BORYSLAV OIL FIELD

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Abstract: *Assessment of the environmental impact of the oil and gas production includes a set of studies and calculations concerning the environmental impact for the relatively short-term prospects. In particular, in current projects of oil and gas fields development, construction of wells, and building of other oil and gas complex infrastructure facilities, an estimation of the facility impact on the air, soils, hydrosphere, flora, and fauna. Problem of ecological consequences after completion of the oil and gas facilities operation*

Keywords: *Boryslav oil field, underground waters, oil and gas production*

DETERMINING A MATHEMATICAL MODEL BASED ON EXPERIMENTAL STUDIES

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Abstract: *The study was realised by adopting a kinetic model. The kinetic model is applied for the copper spire elongation and consists in determining the objective function of the type: $y' = b_0 + b_1x_1 + b_2x_2 + \dots + b_kx_k$. Applying the mathematical model required having information from experimental data for the chemical composition of the raw material, the copper cathodes (ppm): Fe, Ag, O₂ and the spiral elongation testing of the wire from this lot. We chose eight experiments from the 27 samples. We determined the base level and the variation intervals. We calculated the matrix for the complete factorial experiment programming and the coefficient for the model. By representing these in a graph together with the experimental data, it is to be noticed that they are really close and this gives an indication about the determined model which is reality checked. Consequently, the sample we obtained may provide spiral elongation testing depending on the iron, silver and oxygen from the cathodes which are about to be used in obtaining copper wire.*

Keywords: *spiral elongation, copper wire, materials*

PROTECTED NATURAL AREAS IN MARAMUREȘ COUNTY WITH SPECIAL EMPHASIS ON THE GEOLOGICAL ONES (II)

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***Abstract:** Nowadays, protected natural areas, geological reservations, water and soil analyses, rocks petrography, carbonate microfacies, are terms often used in all social domains and not only. The need of approaching this research topic aroused directly from direct observations in the field, during field campaigns in protected natural areas in Maramureș County, especially in the geological reservations. The main educational role of the geological protected areas is represented by a better understanding from the general public of geology as a science, by presenting the petrographic, mineralogical, sedimentological and paleontological diversity of our planet, The Earth. Here, in this second part, we present the following natural areas: Tătarului Gorges, The Columns From Limpedea - Natural Monument and The Stone Rosette From Ilba.*

***Key words:** protected natural areas, geological reservations, educational role.*

NATURAL SCIENCE - STUDIES REFLECTED IN THE PRE- UNIVERSITY EDUCATIONAL SYSTEM IN ROMANIA

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***Abstract:** The main purpose of this paper is to summarize the reflection of the natural sciences in the Romanian educational system and to highlight the lack of importance given to this area. Another aspect that we treated is the need to introduce a better representation of these subjects in the national education plan in order to provide a better understanding of the world around us from a young age.*

***Keywords:** natural sciences, geology, geography, educational system, sustainable development*

FROM AFFORDABLE ECO-BUILDINGS TO SUSTAINABLE CITIES (I): CURRENT EXPERIENCES AND FUTURE PERSPECTIVES

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Abstract: *Ecological, green- or sustainable architecture describes environmentally conscious design techniques within a larger discourse of sustainability. It seeks to minimize the negative environmental impact of buildings by enhancing efficiency, local and sustainable materials, and develop opportunities for improvements within buildings structure. The aim of the present paper is to understand how to encourage more affordable eco-housing by learning from examples at home and overseas. The aim of the research were to identify successful examples of low cost eco-housing across a variety of different environments and contexts, understand how such developments have overcome the problems they faced (such as planning, local resistance, finance, or using non-conventional materials), and identify common successful strategies in creating affordable eco-homes which could be adopted even in Romania.*

Key words: *sustainable architecture, affordable eco-buildings, eco-design, low impact.*



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