

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. 1

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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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3. Page dimensions A4, top 2cm, down 2cm, left 2,5cm, and right 2cm.  
Times New Roman font, single spacing.
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## **LEGISLATIVE ASPECTS OF THE QUALITY OF SOIL AND SOIL PROTECTION IN ROMANIA, AS AN EU MEMBER STATE**

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**Abstract:** *Currently, the legislative framework in Romania on soil and subsoil - understood as "the massive of earth" - includes a package with direct references to the issue of soil contamination and ways of investigation. Given that land can be both private and public property, in 2015 work is still undergoing in shaping a common EU policy on the management of contaminated sites, discussions and negotiations with national mark between representatives of various Member States being still not finalized. So the European Union has not yet developed a separate policy on the management of contaminated land existing in the Member States.*

*The paper presents the current level of correlated law concerning environmental factor soil in Romania, EU member-state, and work in practice, based on the functions the soils fulfills in society. Current legislation in Romania shows that the soil functions are recognized and that civil society is interested in knowing the suitability of land for specific uses, health status and quality condition. With Romania's integration in the EU were established new regulations regarding reports on knowledge of the state and protection of soil quality in Romania. Although significant progress is made at a national level, there is no complete study on the suitability of current land in use, categories or maps on the nature and intensity of a given pollutant that contributes to the pollution level.*

**Key words:** *soil, environmental legislation, quality, protection*

## THE COLLAPSE OF ROMANIAN MINING INDUSTRY IN THE PERIOD OF DEVELOPMENT OPPORTUNITIES THROUGH COHERENT STRATEGIES

**IOAN BUD<sup>1</sup>, SIMONA DUMA<sup>\*1</sup>, IOSIF PAȘCA<sup>1</sup>, DOREL GUSAT<sup>1</sup>, ADINA BUD<sup>1</sup>**

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**Abstract:** *The Romanian infrastructure for the mining has been impressive, with some shortcomings aggravated by the lack of state monitoring as regards the waste, the involvement of politics and the use of the miners as a political maneuver mass. The mining sector needed privatization, by models existing in other countries. A success model of a state mining company after the privatization is the case of the company KGHM in Poland which, currently carries on its business on three continents and became the largest employer in Lower Silesia. The paper presents, comparatively, the development strategies of states which have had a vision on the potential of the mineral resources capitalization, have taken account of the population and standard of living increase in, urbanization and hence of the consumption needs and the protection of the environment and sustainable development. These countries have consistently followed the achievement of the objectives set out in their strategies and at the moment the statistics confirm their predictions. Investments in mining activity, worldwide, have increased significantly in the period when Romania has decided to close by deactivating the existing mining capacities.*

**Keywords:** *mining strategies, production capacities, mining closure, environmental protection, sustainable development*



## **ANALYSIS OF HEAVY METAL CONTENT OF DIFFERENT VARIETIES OF WINES**

**THOMAS DIPPONG<sup>1\*</sup>, CRISTINA MIHALI<sup>1</sup>**

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**Abstract:** *Heavy metals are important pollutant both of environment and of food. In wine, heavy metals can originate from natural and anthropogenic sources. In the paper the heavy metals concentrations of some wine varieties originating from two wine-growing region of Romania was assessed. The following heavy metals were analyzed using flame atomic absorption spectroscopy (FAAS) and graphic furnace atomic spectroscopy (GFAS): iron(Fe), manganese (Mn), zinc (Zn), copper (Cu), lead (Pb), nickel (Ni), chromium (Cr) and cadmium (Cd). The measured concentrations of heavy metals were compared with other studies about the heavy metals in wines and with the legal limits. The heavy metals concentrations in the analyzed wines are within the legal limits. The data were modeled in order to find possible correlations between the heavy metals content.*

**Keywords:** *heavy metals, wine, FAAS, GFAS, correlations*

## **GAS OF THE THIN LAYERED LOW PENETRATION UPPER CRETACEOUS ROCKS (GAS SHALE ROCKS) OF THE UKRAINIAN CARPATHIANS**

**VOLODYMYR KHOMYN, LEV MONCHAK, ANDRIJ KLYUKA, IRYNA KLYUFINSKA,  
NATALIIA SHKOLNA**

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**Abstract:** *This article analyzes the prospects of gas-bearing Upper Cretaceous deposits of the Ukrainian Carpathians. Lithological description and correlation of the surface geology and wells data are given. The results of exploratory drilling and testing of the Upper Cretaceous deposits in certain areas are analyzed. Prospects of gas-bearing Upper Cretaceous (Stryi) reservoirs of Ukrainian Carpathians are associated with non-traditional collectors, whose characteristics are similar to the shale formations.*

**Keywords:** *reservoir rock, gas content, argillites and sands horizons, layered low porous rocks, prospects of gas bearing.*

## **PRINCIPLES OF MAPPING THE MODERN ECOLOGICAL SITUATION**

***DENIS ZORIN***

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***Abstract:*** *The environmental map – is a cartographic model of environmental conditions landscaped taxons that together reflect the current environmental situation in the area. The ecological map – is a set of discrete values geosystems condition that gradually changes from point to point, covering the entire study area. Limits on maps held by environmental izo-concentrates clark, background and anomalous values of the content polluting substances.*

***Keywords:*** *ecological map, ecological condition and ecological situation geochemical background anomalies.*

## COMPOSITION AND GEOGRAPHICAL SPREAD OF HERPETOFAUNA IN THE MARAMURES MOUNTAINS NATURAL PARK

**OANA MARE-ROȘCA<sup>1</sup>, MONICA MARIAN<sup>1\*</sup>, LUCIA MIHALESCU<sup>1\*</sup>, ZORICA VOȘGAN<sup>1\*</sup>, ILEANA GLODEAN<sup>2</sup>**

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**Abstract:** *The Maramures Mountains Natural Park is located in the north-eastern part of the county of Maramures (between 47°35'5" and 47°58'20" northern latitude and 24°8'12" and 25°2'38" western longitude), and it has been a protected area for preserving the natural and cultural heritage since 2005. The perimeter of the park shows a great diversity of landforms, due to its geological, tectonic and climate complexity, which generated a wide variety of habitats favorable to the herpetofauna.*

*This study summarizes the results of field and laboratory research on the area of the Maramures Mountains Natural Park during the period of May- September 2015, with a fortnightly frequency, within 8-18 hours. We have used the transect method and the active search in order to map the herpetofauna. Thus, 74 randomized characteristic habitats have been identified and investigated.*

*Nine species of the herpetofauna were identified subsequent to the land observations and laboratory analyses. Out of those ones, there were six species of amphibians (*Salamandra salamandra*, *Mesotriton (Triturus) alpestris*, *Lissotriton (Triturus) montandoni*, *Bombina variegata*, *Bufo bufo*, *Rana dalmatina*) and three species of reptiles (*Lacerta agilis*, *Zootoca (Lacerta) vivipara*, *Vipera berus*).*

**Key words:** *distribution and frequency of amphibians and reptiles*

## «GREEN» INVESTMENT CAPITAL

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**Abstract:** *The following article shows the critical characteristics of renewable energy and the ways of revival of the bonds. This burning issue brings together economics, energy and environmental protection. The author proposed to revive the energy sector through the issuance of so-called «green bonds». The author believes that Ukraine has all the prerequisites for entry into this type of loan which may attract foreign investment is not left industrial companies but also banks.*

**Keywords:** *bond rate, energy*

## **INDUCTION OF THE CARPATHIAN REGION ENVIRONMENTAL SAFETY LEVEL CHANGE USING THE ALTERNATIVE SOURCES OF ENERGY**

**OLEG MANDRYK, YAROSLAV ADAMENKO, LYUDMILA ARKHIPOVA,  
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**Abstract.** *Based on the undertaken researches it is suggested to make the integral assessment of the territory environment safety level on the basis of the modern organization structure control and information model by involving specially formed environmental condition indicators such as quality factors and indexes. These indicators are connected with environmental risk level and allow to make quantitative assessment of the environmental safety level and environmental risk level. The selection of the environment safety indicators and the environmental safety level change of the Carpathian region by using alternative sources of energy are scientifically grounded and analyzed.*

**Keywords:** *environment, environmental risk, environmental safety indicator, alternative sources of energy.*

## **STRATEGIC DIAGNOSTIC ANALYSIS SERVICES OF WATER AND SANITATION IN ROMANIA. EXTERNAL ENVIRONMENT ANALYSIS**

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**Abstract:** *One of Romania's current priorities is to expand and improve the services of centralized water supply so that the entire population to benefit from the water line EU of drinking water. The greatest savings of investments in expansion and improvement of water services can be made in the establishment of the development strategy. An important part of determining the development strategy of water supply services is a strategic diagnostic analysis of the service in which it analyzes internal and external factors affecting such services. Strategic diagnostic analysis is usually done in companies, in this case the water operators. In this study intends expanding business analysis and the outcome operators namely water supply services and sewerage water. This study concerns the analysis of external environment and its influence on water supply services.*

**Keywords:** *water supply services, strategy, external environment analysis*

## MIOCENE GEOLOGICAL-PALEONTOLOGICAL PROTECTED SITES AND AREAS IN VASLUI COUNTY: NEW PROPOSALS

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**Abstract.** From structural viewpoint, Vaslui County is located at the contact of two main platforms of Romania, i.e. the SW side of the East European (locally named „Moldavian”) at North and a sector of the Scythian one at South. Of interest for this study are the deposits of the last sedimentary megasequence, which offers fair opportunities for studying the Neogene land vertebrate communities. Such faunas lived in the Dacian Basin region in proportion as the emerged land gradually extended to the detriment of the marine-brackish realm, mainly since Middle Miocene (Sarmatian). Among newcomers, one can notice mainly reptiles and mammals that arrived either from east, or from southwestern regions. If such fossils were once discovered only due to fortuitous finds, in the last decade some new localities of large national or international interest were set on by systematic diggings. Among these ones, the most noticeable are: Draxeni (Late Bessarabian), Crețești-Dobrina 1 (Khersonian), Pogana, Mânzați and Gherghești (Meotian). All yielded rich vertebrate assemblages, including new taxa for this region and for Romania. Due to these discoveries, Miocene environments could be better reconstructed, as long as among these taxa some are useful markers. Herein, we propose new geological-paleontological protected sites and areas based on these localities. For instance, they are extremely scarce in Vaslui County, none of them concerning Miocene deposits. In this manner, the geological heritage of this region would be better show to good advantage, mainly for the wellbeing of the local communities. A series of protection and conservation proposals are underlined.

**Key words:** geology, vertebrate paleontology, Middle-Late Miocene, Moldavian and Scythian platforms, geological heritage, Romania.



## **PROTECTED NATURAL AREAS IN MARAMUREȘ COUNTY WITH SPECIAL EMPHASIS ON THE GEOLOGICAL ONES (I)**

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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 planet Earth. Here we present the follows natural areas: Creasta Cocosuhui, Babei Gorges and Fossiliferous reservation from Chiuzbaia.*

**Key words:** *protected natural areas, geological reservations,*

## **COUNTY MUSEUM OF MINERALOGY "VICTOR GORDUZA" BAIAMARE – CUSTODIAN OF PROTECTED AREAS**

***IOAN DENUȚ<sup>1,2</sup>, ALEXANDRA SÎNGEORZAN<sup>1</sup>, IOAN BEREȘ<sup>1</sup>, ANCA COCIOTĂ<sup>1</sup>,  
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***Abstract:*** *The paper outlines the three natural protected areas of geological importance from the Baia Mare area for which the Mineralogy Museum filled documentations in order to obtain their custody: The Limpedeia Columns, The Stone Rosette from Ilba and The Fossil Reserve from Chiuzbaia. All the problems that were identified in these areas are detailed and there are also issued proposals for resolving or improving them.*

***Keywords:*** *natural protected areas, custody procedures, mineralogy museum, Limpedeia, Chiuzbaia, Ilba*

## **REGARDING THE EXPERIMENTAL ANALYSIS OF THE MEANDERING PHENOMENON GENERATED AT A RAILWAY WAGON**

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**Abstract:** *During running, the railway vehicles are subjected to external excitation generating vibrations. These vibrations have a negative impact on the quality of travel and can endanger road safety. Vertical and transverse unevenness of the track and its discontinuities are the main source of vibration from railway vehicles. Another source of vibration is the rolling stock defects such as eccentricity and flatness tread. Mathematical modeling by random processes of the excitation induced by the path irregularities and dynamic response generated by the vehicle in motion. This method was used in the dynamics of railway vehicles in the last period, being facilitated by the expansion theory of random vibration and the continuous improvement of equipment. In the present study, using method correlation coefficients between measured accelerations in three directions applied for both signals unfiltered and filtered signals especially, we have asceratined a strong correlation of acceleration horizontally and poor correlation between transverse and vertical.*

**Keywords:** *vibration, flexuosity movement, numerical processing*



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