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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 XXXII Nr. 1

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UNCONTROLLED DISCHARGES OF MINE WATER FROM CLOSED MINING PERIMETERS

IOAN BUD, IOSIF PASCA, SIMONA DUMA, DOREL GUȘAT
Technical University of Cluj-Napoca, North University Centre at Baia Mare, Faculty of Engineering, Mineral Resources, Material and Environment Engineering Department, Baia Mare, Romania

Abstract: *In the northern part of Romania, in the former mining perimeters there have been significant leakage of mine waters that have severely affected the environment. The paper presents the causes and consequences of these uncontrolled leaks loaded with heavy metals. Issues related to minimizing the long-term consequences of this serious phenomenon on the part of the authorities are highlighted.*

Key words: mine water, mine closure, uncontrolled discharges, acid drainage

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TECHNOLOGICAL FEATURES IN THE LAMINATION OF BANDS

ELENA POP

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Abstract*: This paper presents an experimental and practical study of the lamination of aluminium bands, determining the widening and the influence of various factors upon the widening. Two samples were laminated from two aluminium alloys, in the shape of bands. The points of the widening graph were drawn depending on the relative reduction for the two samples. For practical purposes, special importance is given to the preliminary determination of the value for the widening. Various factors influence the widening in lamination: the increase in the absolute reduction, the distribution of the reduction on passings, the shape of the deformation area, the ratio between the width and the length of the deformation area, the diameter of cylinders, the width of the semi products, the coefficient of friction, the lack of uniformity in the deformation. The widening is an important technological feature in the lamination process which needs to be monitored taking into consideration the factors that influence it in order to obtain finished products with high dimensional precision and reduced execution tolerance.*

Keywords*: lamination, bands, the widening*

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TESTS ON INHIBITION OF GERMINATION AND GROWTH OF CORN PLANTS IN THE PRESENCE OF TOXIC SUBSTANCES

VALERIA MIRELA BREZOCZKI[1], GABRIELA MARIA FILIP[1]
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Abstract

The paper presents the results of the germination tests and growth of corn seeds in the lab by exposing them to five concentrations of toxic substances. Nutrient solutions with five different copper sulfate concentrations or zinc sulfate concentration, were used for the tests, respectively 5 mg/L, 15 mg/L, 45 mg/L, 135 mg/L and 405 mg/L and a control variant with no toxic. Each of the variants were carried out in duplicate, and 5 corn seeds were added for each replicate. The exposure periods were 3 and respectively 7 days and after each established period of time, measurements were carried out for the length of the roots and stems. A series of observations, specific for each of the versions, was recorded.

The results of the tests for revealed the following highlights:

- *From the tests we can see how low zinc ion concentrations (5 mg Zn/L and 15 mg Zn/L) have a more positive influence than copper ions on the germination and development of the roots and stems of corn plants.*
- *Zinc ions have a positive influence in low concentrations (5 mg Zn/L) on roots (27,47 %) and stems (5 mg Zn/L and 15 mg Zn/L - 39,05% and 23,41%) during the germination period first 3 days, and a positive influence on stems growth (10 % compared to the control) of copper ions in small concentration (5 mg Cu/L) was registered on germination and growth of stems during the first 3 days.*

Keywords: *ecotoxicological tests, inhibitions, teste ecotoxicologice, toxic sustances*

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BINDING BEHAVIOUR AND OF REACTION PRODUCTS IN BINDER GEOPOLIMER PASTES

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Abstract: *Pastes of granulated blast furnace slag and zeolitic tuff at different mass ratios were activated with alkali solution (sodium silicate) at lower alkalinity with modulus* $M_s = \%SiO_2 / \%Na_2O = 2$. *The heavy metals contained in slag are immobilized into geopolymer matrix of composite material, so obtained and thus significantly reduces the risk of environment contamination. Granulated lead furnace slag, zeolitic tuff, sodium hydroxide and sodium silicate were used as starting materials. Binder of 50% slag developed the highest among all slag based geopolymeric pastes whose compressive strength are 42 MPa. As a result, the cement containing 50% slag that is synthesized at curing (*60^0 *C for 12 h), exhibited higher mechanical strength and SEM observation shows that it is possible to have localized of (C–S–H) geopolymeric gel. Pastes of granulated blast furnace slag (GBFS) and zeolitic tuff (BZ) in mixture developed stable microstructures with high compressive strengths, and the toxic metals (Pb, Zn, Cd) from slag were locked into the geopolymeric matrix.*

Keywords: *blast furnace slag, zeolite, alkaline activated cements, strength, microstructure, geopolymeric gel*

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MINING LEGISLATION CONSIDERATIONS IN ROMANIA

IOAN BUD[1], SIMONA DUMA[1], IOSIF IOAN PASCA[1], DOREL GUȘAT[1]
Technical University of Cluj-Napoca, North University Centre at Baia Mare, Faculty of Engineering, Mineral Resources, Material and Environment Engineering Department, Baia Mare, Romania

Abstract*: Romania has potential in terms of mineral resources but lacks a coherent exploitation and exploitation strategy and at the same time legislation supporting the strategy. The paper points to several contradictory and inconsistent aspects of the current legislation as well as to the projects published for debate.*

Keywords: mineral resources, strategy, legislation, permit and exploitation license.

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THE MINING PATRIMONY OF ROMANIA – FACTS AND PERSPECTIVES

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[4] Transylvanian Museum from Gundelsheim, Horneck Castle, Schloßstraße, 74831, Gundelsheim, Germany

***Abstract**: The role of this paper is to summarize the current status of the protection and preservation of objects from Romania's mining patrimony, including projects in elaboration and execution stage as well as finished and implemented projects, with the salt mines as a separate category. The Victor Gorduza County Mineralogical Museum's project is to install a mining museum in the former explosive deposit of the nr. 5 Blind Shaft from Baia Mare, which represents the property of the Human for Human Association.*

***Keywords**: mining, patrimony, mining museum, Baia Sprie, Maramureş, Romania*

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CARTOGRAPHIC MODELS OF DNIESTER RIVER BASIN PROBABLE FLOODING

VASYL TRYSNYUK, TARAS TRYSNYUK, VIACHESLAV OKHARIEV
VIKTOR SHUMEIKO, ANATOLII NIKITIN
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Abstract: *Theme of the paper is the solution of flooding geo-models creation for Dniester river basin territory, which uses contact and remote measurements. Natural and anthropogenic factors causing groundwater level rising were analyzed for localization of flooded zones and forecasting of geometric characteristics.*

Key words: *environmental safety of territories, cartographic graph model, anthropogenic impact, remote sensing methods, contact methods.*

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MEDICAL WASTE MANAGEMENT WITHIN THE INFECTIOUS DISEASES AND PSYCHIATRY HOSPITAL, BAIA MARE

GABRIELA MARIA FILIP[1], VALERIA MIRELA BREZOCZKI[1],
Technical University of Cluj-Napoca, North University Centre at Baia Mare, Faculty of Engineering, Department of Mineral Resource, Materials, and Environmental Engineering, 62A Dr. Victor Babes Street, Romania

Abstract. *The paper presents several aspects of the general theme related to medical waste management and elimination in a health unit in Baia Mare. Therefore,* ***non-hazardous wastes*** *are collected like household wastes, being temporarily stored in euro containers and transported by S.C. DRUSAL S.A.* ***The hazardous wastes*** *are selectively collected in special containers, temporarily stored in an especially laid out storage unit and transported by the S.C. ECO BURN S.R.L company to the "Stery Cycle" Bucuresti waste incineration plan.*

Keywords: *medical waste, medical waste management*

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PROTECTED NATURAL HERITAGE ON ROUTE FROM PHILOSOPHY TO ENVIRONMENT ENGINEERING

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Abstract: *In a society like this one, based on knowledge and computerization, constantly facing new challenges, high-quality academic education is a necessity for progress in all fields of activity, in order to achieve new standards of education and culture, civilization and knowledge . Compared with the developed societies, members of sustainable communities are more involved in environmental protection and are more interested in controlling phenomena that would harm the quality of the environment. The state also allocates larger funds in this sector, invests in clean technology and depollution, but especially in the preservation of natural heritage, which proves to be particularly important for the community. Through this paper, we want to show that research as an objective is a necessity for the economic development of society and as the main vector of the dissemination of information at the level of the university environment has an important place in the modern society, starting from the very basis of philosophy, to constantly seek and preserve the beauty, dynamics and nature's specificity.*

Keywords*: natural heritage, knowledge society, philosophy, law and environmental engineering*

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PEDOLOGICAL PROCESSES IN TECHNOSOILS

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Abstract: *The article studies the correlation and regression analysis concentration of main ions in the soil. According to the research the empirical equations was received. The obtained dependencies can be used in the analytical studies of soil samples, modeling of salts dissemination in the soil, development of measures for the soil restoration, calculation of the needed amounts of subsidiary chemicals for saline soils restoration.*
Key words: *soils, toxic salts, correlation and regression analysis*

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THE EVOLUTION OF GREENHOUSE GASES IN ROMANIA BETWEEN 2006-2015

GABRIELA MARIA FILIP[1], VALERIA MIRELA BREZOCZKI[1], ANAMARIA MARC[1]
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Abstract: *The increase of the atmospheric pollution degree is the main factor that leads to important changes in the climate equilibrium on a global scale. Global warming is determined by the presence in the atmosphere of the greenhouse gases. The present paper proposes to give out a clear situation on the evolution of greenhouse gases emissions at national level for the last decade of the 21st century. Concurrently, data taken over from ANPM (National Agency for Environment Protection) regarding the situation of every greenhouse gas inventoried as well as establishing their main emission sources will be included within the paper.*

Keywords: *greenhouse gases, emission sources, global warming*

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IMPLICATIONS OF PHILATELY IN PROMOTING THE PROTECTED NATURAL AREAS (I): CEAHLĂU NATIONAL PARK

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Abstract: *We define and accept natural heritage as being the ensemble of components and physical-geographic structures, flora, fauna and biocenotic natural resources, of whose importance has an ecological, economical, scientific, biogenetic, and health values , a recreative and cultural-historicvision iss having relevant significance under the aspect of conserving the biodiversity of ecosystems' functional integrity, genetical heritage conservation, vegetation and animals, and for the satisfaction of the everyday life , as well as wealth, culture and civilisation, of bothpresent and future generations. Romania is a blessed place with many areas of unique beauty - as part of the natural heritage - with places where the spectacle of nature delights your eyes and take your breath with every step. Constantly promoting philately themes that use natural wealth and the beauty of our country as subjects, the administrative entity (with various names over time) responsible for issuing postage stamps performs a series of postage stamps in whose images are found rarities of flora and fauna, a miracle of nature. In this paper, we bring to discussion, among other things, the most significant philatelic peculiarities in the Ceahlău National Park.*

Keywords*: natural heritage, protected areas, biodiversity, Ceahlău National Park*

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CREATIVE REUSE OF WASTE FOR INTERIOR AND GARDEN DECORATIONS

ANAMARIA MARC
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Abstract: *Waste is defined by OUG no. 195/2005 as a substance or an object the owner discards, intends or is required to discard. [1] Wastes are related to the consumer's lifestyle and mentality. The main purpose of the article is to present creative, practical and aesthetic ideas on the reuse of household waste generated in households. There are presented statistical data taken from the Annual Environmental Reports, by ANM, the quantities of household waste generated in the last years and the degree of waste collection in Romania. In Romania most of the waste is eliminated through storage, so the most favorable actions for a proper waste management are prevention and reuse. The paper deals with the problem of dry solid waste: plastics, glass and metals waste.*

Key words: *waste, household waste, recycling, reuse, waste collection*

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THE SIGNIFICANCE OF ENERGY PERFORMANCE CERTIFICATION OF BUILDINGS

TÓTH MARIA

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***Abstract**: In the European Union buildings are responsible for 40% of total energy consumption. Reducing energy use and the use of energy from renewable sources in the construction sector is an important measurement needed to reduce the Union's energy dependency and greenhouse gas emissions. The Energy Performance Certificates (EPCs) of a building is intended to declare and display the energy performance of the building, presented in a unitary synthetic form, detailing the main building characteristics and associated facilities resulting from the thermal and energy analysis. The Energy Performance Certificates (EPCs) is in fact an energy balance of the analyzed building.*

For a good cohabitation, in case of "Green Houses[i]" it is necessary to be anchored in reality, to be aware of the impact that a construction - used for living or for other activities- has on the environment.

***Keywords**: housing, energy performance certificate, energy audit*

[i] Coman, M., 2009, Management ecologic, Editura Risoprint, Cluj Napoca

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