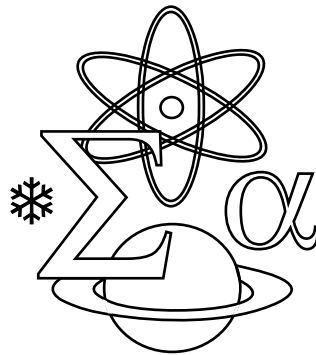


# AJNTS

ALBANIAN  
JOURNAL OF  
NATURAL AND  
TECHNICAL  
SCIENCES



2013 (2)

XIX (35)

PUBLISHED BY ACADEMY OF SCIENCES OF ALBANIA

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# A GENERALIZATION OF EXISTENCE OF FIXED POINTS IN QUASI-METRIC SPACES

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## ABSTRACT

In this paper results on fixed points that are related to a special class of functions are reported. Based on the results of the fixed points of two functions in metric spaces, a theorem on fixed points of three functions in quasi-metric spaces was proved.

**Keywords:** fixed point, quasi-metric space, complete space, continues functions, class  $G_k'$

# **AN OVERVIEW OF RADIOACTIVE WASTE MANAGEMENT IN KOSOVO**

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## **ABSTRACT**

The current situation in Kosovo with regard to radioactive waste management, a waste inventory, classification and interim storage based on IAEA recommendations is reported. There are more than 80 sealed radioactive sources out of use in the country, including radioactive lighting, other than radioactive waste generated in nuclear medicine departments. With the absence of essential information different methods were applied to identify the type of radionuclide and its activity. Methods for the safe management of different groups of waste, including interim storage, were determined using the IAEA's waste classification scheme.

**Keywords:** radioactive waste inventory, waste classification, waste management, interim storage.

# **RADIATION DOSES BY NATURAL SOURCES TO THE POPULATION OF PRISTINA, KOSOVO**

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## **ABSTRACT**

An investigation to determine radiation doses to the population of Pristina, Kosovo, caused by natural radioactive sources in the environment is reported. The investigation was carried out at five sites in Pristina, located in different locations indoors. The results are that the radiation dose to the Pristina population is 2.54 mSv/year, within the range of values of radiation dose for populations in South-east European countries.

**Keywords:** radiation dose, natural radioactive sources, indoors radon, external and internal radiation sources

# **DETERMINATION OF A CTV-PTV MARGIN FOR THE PELVIC AREA USING AN ELECTRONIC PORTAL IMAGING DEVICE (EPID)**

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## **ABSTRACT**

Evaluation of setup uncertainties and determination of margins between the clinical target volume and the planning target volume (CTV-PTV) in different parts of the body is of great concern for professionals and administrators involved in the area of radiotherapy. An Electronic Portal Imaging Device (EPID) was in the present investigation involved to determinate these margins for the pelvic area. The plan created in the treatment system consisted of four-beam box technique. A Digitally Reconstructed Radiograph (DRR) of the anterior-posterior (AP) field and one lateral field was sent to an iView system, where portals from EPID were also sent to compare differences when carrying out checks for patient positioning. The 20 patients participating in the investigation were submitted to 240 measurements in right-left, superior-inferior and AP directions at the Radio-Oncology Centre, Hygeia Hospital, Tirana. Once, 40 DRRs and 120 portals were created, measurements were carried out on the CTV-PTV margins with the results showing differences between the different dimensions.

**Keywords:** margin, portal image, DRR, pelvic area, radiation beam

# ASSESSMENT OF ENVIRONMENTAL SITUATION OF VLOBAYBASED ON NUTRIENTS AND HEAVY METALS CONTENT OF WATER SAMPLES

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## ABSTRACT

The marine and coastal environment around the city of Vloa is of great economic and ecological importance for the country. Considerable amounts of waste have been discharged directly or through river flows and atmospheric deposits into the sea as a result of mismanagement. The present paper aims to evaluate the water quality and the environmental situation in Vloa Bay. Determination of the amounts of heavy metals and nutrients in seawater samples are essential for an appropriate assessment. Samples were collected from five sampling sites in the coastal area of the bay. Sample stations were chosen carefully in order to assess the general environmental situation and evaluate the possible sources of pollution. Nutrients were determined spectrophotometrically. The results were within the levels permitted under the EC Directives. Inorganic nutrients levels indicated that the studied areas were generally oligotrophic. Heavy metals concentrations were determined via Atomic Absorption Spectroscopy (AAS; by use of flame or an electrothermal system, or both). Heavy metals content were in decreasing order: Zn>Cu>Cr>Pb>Cd>Hg.

**Keywords:** coastal environment, Vloa Bay, heavy metals, nutrients, AAS

# ENVIRONMENTAL SITUATION OF SHARRA AREA BASED ON CHEMICAL PARAMETERS AND ON APPLIED QUALITY STANDARDS

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## ABSTRACT

Important chemical-physical parameters, ground surface water (nutrients and heavy metals) and particularly gas emission (TSM, PM10, NO<sub>2</sub>, H<sub>2</sub>S, CH<sub>4</sub>, VOC) have been investigated for assessment of environmental situation of Sharra landfill. In addition, specific standards regarding the landfill's operation were applied.

The present investigation has been periodically carried from late 2007 to June 2012, when field campaigns concerning the present investigation finished. Results demonstrate that the parameters have decreased several fold from 2008-2012. Currently, most of the parameters are in line with environmental standards (except Ni<sup>2+</sup>) for a normal landfill with good parameters to humans and environment.

Designed and constructed in line with the Albanian legislation, Sharra landfill operates on basis of environmental protection regulation comprising two stages: planning and operation.

Regulation at the planning stage relates to gaining approval for the landfill. The following criteria considered of primary concern for the European Community and EPA in relation to landfilling operations have been taken into consideration: i) water pollution - discharges of pollutants to ground and surface waters, ii) air pollution - emissions of pollutants to the atmosphere, iii) land management and conservation and, iv) hazards evaluation.

**Keywords:** Quality, management, environment problems, landfill, waters, nutrients and heavy metals



# ANALYSING PROCEDURES OF SULPHUR CONTENT IN OINTMENT FOR SCABIES TREATMENT

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## ABSTRACT

Sulphur is a common element used in a variety of ointments and creams that treat skin conditions including scabies, psoriasis, keratosis and mycosis. In addition, it is used as part of many ointments and creams to alleviate various conditions such as psoriasis, eczema, dandruff and acne. In the present investigation, ten samples from a single batch of a scabies-treatment cream were randomly collected and analysed. Elemental sulphur determination was performed spectrophotometrically. Elemental sulphur is soluble in many organic solvents, including  $\text{CCl}_4$ ,  $\text{CHCl}_3$  and  $\text{C}_6\text{H}_6\text{OH}$ . Hexane was used to separate the organic ingredients present in medical pomade (white Vaseline and liquid Paraffin) prior to analysis. The spectrophotometric method we developed for quantification of elemental sulphur is based on the extraction of  $\text{S}^0$  form with  $\text{CCl}_4$ . The procedure is a modification of several existing methods and allows the extraction of elemental forms of sulphur. Spectrophotometric measurements were performed at 277 nm. The detection limit is 0.02 mg/L. The recovery of S is approximately 98 to 103%. The method is suitable for the determination of sulphur in different medicinal ointments and/or creams with a wide range of sulphur concentrations. It is rapid and suitable for routine analysis in laboratories without specialized equipment.

**Key words:** elemental sulphur, spectrophotometry, anti-scabies drug, detection limit, recovery

# DETERMINATION OF SOME VOLATILE ORGANIC POLLUTANTS IN WATER SAMPLES OF LANA RIVER

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## ABSTRACT

Data on some volatile organic pollutants (VOC) in water samples of Lana River, which passes through the Albanian capital, Tirana, are in the present paper reported. VOCs were detected through use of the technique of headspace solid phase micro extraction (HS-SPME). The growth of Tirana, coupled with a large number of automobiles has led to environmental problems. One litre water samples were collected in October 2011 from nine stations along the river. The samples were analysed for methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), benzene, toluene, ethylbenzene and xylene (known as BTEX) and chlorobenzenes applying gas chromatography (GC) technique with a flame ionization detector (GC/FID). A VF-1ms capillary column (30m x 0.25mm x 0.25 $\mu$ m) was used to separate the compounds. GC with an electron capture detector (GC/ECD) was used to determine chlorobenzenes, while an Rtx-5 capillary column (30m x 0.25mm x 0.25 $\mu$ m) was used to isolate and determine chlorobenzenes also. In both cases, samples injections were done in HS mode. Results report that the primary man-made source of BTEX into water is via emissions from motor vehicles. Chlorobenzenes containing four to six chlorine atoms were detected in almost all water samples of the river.

**Keywords:** VOC, HS-SPME, GC/FID, water analysis

# ENVIRONMENTAL TEMPERATURE VARIATION IMPACT ON MICROBIAL CHARGE OF DRINKING WATER OF THE SUPPLY NETWORK OF TIRANA

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## ABSTRACT

This paper investigates the total microbial charge of indicator microorganisms *E.coli*, *E.faecalis*, and *P.aeruginosa*. The present investigation was carried out in February and July, as better information on microbial charge with regard to temperature variation could be provided. Samples were collected from 24 different points in the water supply distribution network in Tirana district. Microbiological analyses involved membrane filtration system and cultivation in the respective selective media. Results report that the total microbial charge is increased by 20% from winter to summer, mainly due to temperature and interruption of water supply during the day. *E.faecalis* showed the major increase (42%) in the total charge.

**Keywords:** drinking water, safety, indicator microorganisms, network supply, environmental temperature

# POTENTIAL TOXIC RISK FROM SOIL ELEMENTS IN BUTRINT LAGOON

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## ABSTRACT

In the present investigation, the presence of toxic metals in soils, sediments, water and mussels at some points of the aquatic environment of Butrint Lagoon is reported. Rich in organic matter due to its origin, the Vurgu field is characterized by the highest values of heavy metals. In addition, Pb and Cu were found to be the most commonly available metals in the soils around Butrint, while Cd and Cr were the least bio-available. These elements have the possibility to leach from the soil. The presence of high concentrations of Cu extracted with water was detected because copper compounds are used as or in fungicides, insecticides and fertilizers. The mean value of Pb in sediments at some sampling stations was higher than in reference soils due to anthropogenic activities, with fertilizers and pesticides applied in agricultural activities and effluents coming from the urban area of Ksamil. Cr content in sediments at some sampling stations was higher than the maximum permissible limits. Natural weathering of rocks is considered as a source of heavy metals concentration in the sediments of Butrint Lagoon.

**Keywords:** Heavy metals, pollution, Butrint Lagoon, alga and bryophytes

# **THE MEASUREMENT OF SEISMIC WAVES IN THE FRAMEWORK OF THE HYDROPOWER PLANTS ASHTA-DRINI RIVER, ALBANIA**

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## **ABSTRACT**

Albania is characterized by shallow crustal seismicity. Separate strong motion relations are of great importance for the tectonic regime of both eastern and western Albania. The style-of-faulting parameter is a means to address the types of seismic source. Estimating the greatest possible seismic hazard basing on fault types is of great importance for critical structures such as the Ashta hydro power plant (HPP), as faults are earthquake generation source in or near the area under investigation. Peak ground accelerations (PGA) on required soil sites of HPP Ashta were accurately evaluated basing on the geotechnical profile from bedrock depth to the surface,  $V_{S30}$ , and SPT-N for Quaternary gravel sequence. Here, Palaeogene flysch formation could be met. Seismic field measurements to determine the shear wave velocity  $V_{S30}$  for both gravel thick deposits and flysch rock deposits were of great importance for seismic hazard calculation. In the area of geotechnical investigations, application seismic refraction and surface waves methods are of irreplaceable importance for long-term implementation of hydro-power projects, etc.

**KEYWORDS:** surface geologic conditions, Zadrime lowlands, affect ground motions

# **TRANSMISSIBLE VIRAL PROVENTRICULITIS (TVP) IN ALBANIAN BROILER CHICKENS**

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## **ABSTRACT**

Transmissible viral proventriculitis (TVP) is a recognized cause of production losses in broiler chickens. In the present investigation, TVP was identified based on histopathologic detection of characteristic microscopic lesions. In the present investigation broiler chickens of 20–35 days were analysed. Microscopic lesions in proventriculi of affected hens consisted of glandular epithelial acute necrosis, ductal epithelial hyperplasia, polymorphous lymphocytic infiltrations of the interstitial tissue of the proventriculus replacement of glandular epithelium with ductal epithelium, and diffuse interstitial lymphoid infiltration. The results are similar to those reported in the literature.

**Keywords:** transmissible viral proventriculitis, TVP, Albanian broilers

# **COMPARATIVE STUDY OF MACROZOOBENTHOS OF ROCKY AREAS OF THE ADRIATIC SEA IN ALBANIA IN SPRING AND SUMMER**

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## **ABSTRACT**

Species composition, quantitative characteristics of the populations and their seasonal variations of macrozoobentos from the shallow rocky areas of the Adriatic Sea in Albania are reported in this paper. Sampling was conducted at Shën Pjetër, Kallm, Spille and Triport in the spring and summer of 2011. 173 taxa were recorded. Gastropods, bivalves and crustaceans were predominant in species number in both sampling seasons. Seasonal variations were considerable and trochid gastropods had the highest abundance in all sites. A possible important factor influencing the species presence and quantitative characteristics of macrozoobenthic populations in the studied area may be related to the algal cover.

**Keywords:** Macrozoobenthos, Adriatic Sea, Albania

# **MULTIPLEX-PCR AND SITE-SPECIFIC PCR USED SUCCEFULLY FOR DETECTION OF ASYMPTOMATIC PHASES OF VIRAL DISEASE IN APPLES**

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## **ABSTRACT**

Apples are packed with rich phyto-nutrients that are indispensable for human health. Economically, apple is the most important fruit tree cultivated in the district of Korça, Albania. Climatic conditions, systematic management are very important for successful cultivation of apples. However, these plants have been subject to viral disease, such as Apple mosaic virus (ApMV), apple stem pitting virus (ASPV), among others. Efforts made for early detection of viral infection by ApMV during asymptomatic phases by applying PCR-based methods are here reported. Amplification of viral genomic fragments during standard site-specific PCR procedure and using Multiplex-PCR for different viral genomic fragments in the same reaction mix proved to be successful for detection of ApMV. The targeted plants were the two cultivars Gold and Starking grown in private collections in the district of Devoll, Korça. PCRs were performed on genomic DNA extracted from leaf tissue. With few modifications for the Multiplex-PCR, reaction mixtures followed the recommendations of manufacturers for RT-PCR Kit SIGMA and Myrta, (2012) for site-specific PCR for ApMV. In both cases the products were of expected size, and for ApMV fragments found in the template DNA. Starking cultivar samples did not give products in either case, while all the samples of cultivar Gold gave products, indicating they had been infected.

**Keywords:** Apple Mosaic Virus (ApMV), Multiplex-PCR, viral genomic fragments, Gold and Starking apple cultivars



# **PULMONARY INVOLVEMENT IN RHEUMATOID ARTHRITIS**

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## **ABSTRACT**

Rheumatoid arthritis (RA) is a systemic autoimmune and inflammatory disease that affects not only the articulations, but also various organs. Pulmonary involvement is one of the extra-articular manifestations of RA and the cause of morbidity and mortality in patients with the disease. The present investigation aims at: i) identifying pulmonary injuries in patients with RA, ii) assessing them in relation to alterations of immunological examinations and arthritis activity and, iii) defining their association with gender. This was a cohort and prospective investigation that involved 63 patients. All the patients

underwent laboratory tests. Disease activity score 28 (DAS 28) was used to measure RA activity. Patients underwent pulmonary high-resolution computed tomography and pulmonary function test. In addition to 17 patients with restrictive ventilator insufficiency and 4 (6.3%) patients with obstructive ventilator insufficiency, there were 22 patients (34.9%) with interstitial lung disease, 7 (11.1%) with bronchiectasi, and 3 (4.8%) with pleural effusion. Pulmonary manifestations are common in RA. These injuries are anatomical and functional. In addition to immunological alterations and disease activity, gender has a large influence on pulmonary injury.

**Keywords:** rheumatoid arthritis, pulmonary manifestations, interstitial lung disease

# **SPIROMETRY IN A GROUP OF ALBANIAN ASTHMATIC CHILDREN: DOES FEV1 CORRELATE WITH ASTHMA SEVERITY?**

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## **ABSTRACT**

This paper investigates the relationship between forced expiratory volume in one second (FEV1) and asthma severity. Fifty-six children (18 girls; 38 boys) suffering from asthma were followed in the present investigation. The age of the children ranged from four to fourteen years, with a mean age of 8.9 years. The clinical history was collected for each patient. The children were classified into four groups. All 56 children were assessed for FEV1 by means of spirometry; among them 7.1% had mild intermittent asthma, 34.6% had mild persistent asthma and 57.6% had moderate persistent asthma; none had severe persistent asthma. The mean baseline FEV1 values were: mild intermittent, 114%; mild persistent, 94.9%; moderate persistent, 94.5%. Most (80.7%) of the children had FEV1 > 80%, and all of those with intermittent asthma had FEV1 > 80%. Of those with mild persistent asthma, 20% had FEV1 < 80%, and 77.7% had FEV1 > 80%. Of those with moderate persistent asthma 20% had FEV1 < 80%, and 80% had FEV1 > 80%. The majority of asthmatic children had FEV1 values within the normal range. The severity of asthma did not correlate with single measurements of FEV1.

# **EPIDEMIOLOGY OF CMV INFECTION IN DIFFERENT GROUPS OF PATIENTS IN ALBANIA**

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## **ABSTRACT**

Cytomegalovirus (CMV) infection is the most frequent congenital infection of a blood donor population. The present investigation aimed at exploring the epidemiology of this infection in a patient population in Albania and included the main risk groups—multitransfused patients or thalassemia patients (MP, 136), and patients with hematologic malignancies (PHM, 86)—, as well as a control group (CG, 76). All patients were tested for CMV IgG and IgM. Patients with IgM positive were tested for IgG avidity. The prevalence of CMV infection in MP was 96.3%, significantly higher than in the control group (85.5%). MP treated with leukoreduced blood showed a lower prevalence of CMV IgG and IgM compared to MP treated with unfiltered blood (90.5% vs. 100% for IgG, a significant difference,  $p=0.01$ ; 8% vs. 15% for IgM, ns). All PHM cases were IgG positive and 18.6% were IgM positive, significantly higher than in CG (4.1%). IgM prevalence for PHM treated with pre-storage filtered blood was significantly lower than for patients treated with unfiltered blood (6.1% vs. 26.4%). The prevalence of CMV infection was significantly higher in MP patients and in immunocompromised patients undergoing transfusion of unfiltered blood. In countries with a high prevalence of CMV infection, where finding CMV negative blood is very difficult, filtration of leukocytes from transfused blood provides protection against CMV infection in at-risk patients.

**Keywords:** CMV epidemiology, CMV in MP, CMV immunocompromised patients

# **MODELLING AND MULTIFACTORIAL SENSITIVITY ANALYSIS OF ELECTRICITY PRODUCTION COSTS FOR THE ENERGY SUPPLY SYSTEM OF KOSOVA (2012–2030)**

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## **ABSTRACT**

In the future, a sustainable energy supply will be a central theme in terms of development in all spheres (Steger *et al.*, 2002). Recently, modelling of energy systems has been marked by increasing progress towards sustainable energy supply to customers. In Kosovo, the energy supply system, ruined since 1989, requires immediate reformation. Accurate scientific modelling and studies are of great importance. Meanwhile, the scheme of alternative energy supply system would be very appropriate.

**Keywords:** modelling, systems analysis, indicators, energy and supply, predictions, sustainability, risk theory and analysis

## **DISCUSSIONS**

# **THE ROLE OF INTERNAL AUDITING IN FIGHTING CORRUPTION**

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### **ABSTRACT**

The role of internal auditing in companies, organisations and institutions is essential as it helps reduce, if not eliminate, corruption, which is very concerning for governments, institutions, civil society, public and private companies and society as a whole. Around the world stock markets have fallen, large financial institutions have collapsed or been bought out due to fraud and corruption. Financial statements, collaborative actions and improvement of legislation can be effective in the fight against corruption. Effective implementation of current technological developments would be of great benefit for economic development as using of the new algorithms and methodology that are used are essential for organisations as they impose standards of ethics, integrity, confidentiality and competency.

**Keywords:** audit, internal audit, ethics, high quality, supervision, algorithm and methodology