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# ABSTRACTS BOOK

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# ABSTRACTS

## DEMOCRATIC CURRICULUM CONCEPTS

**Lili Davit Koridze,**

**Abstract**

With all the discussion and preparation for introducing open education management into the Georgia schools, the prospect of democratic governance sounds promising, but it will involve several layers and aspects of culture, some of which may be challenging for the schools and parents involved. Georgia will effectively serve as a laboratory for leading edge ideas in language, culture, and communication, and how these relate to education (Chomsky, 1965; Hymes, 1972; Hymes, 2001; Labov, 1991). With a change so big coming, education researchers need to track the introduction of democratic governance in Georgia in terms of impending or possible curriculum changes.

Keywords: several layers, education, management, education researchers

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# GROUNDWATER CONTAMINATION AND HEAVY METAL DETECTION LEACHED FROM COAL – FIRED POWER PLANT INDUSTRY IN VILLANUEVA, MISAMIS ORIENTAL, PHILIPPINES

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**Abstract**

The rising demand of energy in the Philippines paved way for the proliferation of different power source, a more dependable energy source which is coal – based thermal power plant. The disposal of coal combustion products in ponds and landfills is a great consideration, because of its leachability. It can become a problem when elements from the ash are leached contaminating groundwater sources. The main goal of this research is to determine leachability of metals from coal combustion products through physico – chemical and heavy metal analyses in nearby source of groundwater. Standard methods were employed in collection and determination of the pH, color, alkalinity, odor and temperature and the heavy metals; As, Cd, Cr, Cu, Pb, Mn, and Hg. Mn was found to have the highest concentration while Hg has the least concentration. The concentrations of heavy metals follow the trend Hg < Cd < Cu = Pb < Cr < As < Mn. Concentrations. Concentrations of heavy metals were detectable but not excessive enough to be over the permissible limit of the Philippine National Standards for Drinking Water thus making the groundwater potable with regards to the measured parameters in the study. Therefore, the studied power plant industry has closely monitored and managed their waste in a very environment friendly disposal system.

Keywords: groundwater, contamination, heavy metals, Flame AAS, Cold Vapor AAS, leached, coal power plant, Philippines

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# ASSESSMENT OF PERSISTENT ORGANIC POLLUTANTS IN WATER SAMPLES FROM RIVER CHALLAWA IN KANO, NIGERIA

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**Abstract**

Almost every type of industrial process releases some amounts of toxic organic and inorganic compounds that ends up in water bodies and/or other environmental compartments. This study was aimed at assessing the levels Persistent Organic Pollutant in Challawa River Basin of Kano State, Nigeria. The investigation was particularly plan to assess the presence of PCBs and PAHs in River Challawa and compare the concentrations of the pollutants with the acceptable limit set by Nigerian Standard and other international regulatory agencies. Data were collected using reconnaissance survey; laboratory experiment as well as other secondary data sources. A total of 26 water samples were collected through stratified and systematic random sampling. Three sampling points were chosen and designated A, B and C along the stretch of the river (i.e. upstream, midstream, and downstream) from Yan Danko Bridge to Tamburawa bridge. The result shows that Polychlorinated biphenyls (PCBs) were not detected but polycyclic aromatic hydrocarbons (PAHs) were detected in all the samples analyzed using GCMS. The total concentrations of PAHs in the water samples range between 0.001 to 0.087mg/l.

Keywords: Persistent, Organic, Pollutant, Challawa River, Nigeria,

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# EVALUATION OF PHOTOIONIZATION DETECTOR (PID) PERFORMANCE IN DETERMINATION OF TOLUENE VAPOR GENERATED IN A CONTINUOUS FLOW SYSTEM

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**Abstract**

The traditional measurement device for assessing the volatile organic compounds (VOCs) concentration is a gas chromatograph generally equipped with a flame ionization detector (GC-FID) or mass detector (GC-MS). However, there are some limitations in working with these equipment's including accessibility of them, need for highly trained operators, and the high cost of sample analysis. These restrictions result importantly in the replacement of direct reading methods, including the use of photoionization detector (PID).

Keywords: equipment's, including, accessibility

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# UTILIZATION OF CORN RESIDUES FOR WATER FILTRATION AT FISH TANKS

**mohamed Ali Alrajhi,** Lec. Ag. Eng., Fac. Ag. Damietta Univ.

**Abstract**

Filtration has been widely used in re-circulating aquaculture system to remove waste. However, the study of some agricultural residues (corn) usage as the filter medium has not yet been studied. Therefore, the aim of this study is to construct a filter made from inexpensive and readily available corn residues and to analyze its effectiveness in controlling suspended solids that directly impact health of fish through abrasion of gill tissues or indirectly through water quality deterioration. The performance evaluation procedure was carried out in an aquaculture system with production in glass tanks located indoor in laboratory at Faculty of Agriculture, Damietta University, Egypt. The evaluation included three concentrations of total suspended solids (450, 900 and 1350 mg/l); four residues particle size distribution (3.35, 9.53, 12.7 mm and ascending orderto mentioned sizesfrom bottom to top); and four thicknesses of filter layer (9, 21, 33 and 45 cm). The effectiveness of this filter was measured by determining filter efficiency ($\eta_f$), % and filtration rate (FR), ml/min. It was observed that the maximum value of ($\eta_f$), % was achieved at 450 mg/l concentration of total suspended solids, ascending orderto sizesfrom bottom to topand 45 cm thickness of filtration layer.The maximum value of filtration rate was achieved at 450 mg/l concentration of total suspended solids, 12.7 mm particle size distribution and 9 cm thickness of filter layer. Results indicated that this filter is efficient enough to remove suspended solids. Therefore, this milled corn residues filter can be used in aquaculture systems for Nile tilapia, *Oreochromis niloticus* culture system.

Keywords:agricultural residues; corn; filter; re-circulating aquaculture system; total suspended solids; filtration rate.

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# CURRICULUM CONTENT ANALYSIS OF HIGH SCHOOL BIOLOGY, CHEMISTRY AND GEOGRAPHY TEXTBOOKS BASED ON ENVIRONMENTAL LITERACY APPROACH IN 2013- 2014 SCHOOL YEAR

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**Abstract**

This research was conducted with the aim of studying the current condition of textbooks based on the amount of attention paid to components of Environmental literacy including knowledge, skill and environmental attitude. Research method was content analysis using Shannon's entropy technique and page analysis unit (text, questions, exercises, illustrations) was High School textbooks. Data collection tool was content analysis checklist, validity of which has been confirmed by environmental experts and curriculum designers. Results of data analysis indicated that More attention has been paid to environmental knowledge rather than environmental attitude or environmental skill and textbooks do not address environmental components equally. Based on the findings of this research, revising the curriculum content in high school curricula with regard to attention to components and indexes of Environmental literacy seems to be necessary.

Keywords:Content analysis, Curriculum, Environmental literacy

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# REDEVELOPING RICE PADDY AGRICULTURE IN ROMANIA – AN ALTERNATIVE SOLUTION TO DECREASE ARIDITY IN FLOODPLAINS OF LOWER DANUBE BASIN

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**Abstract**

Amid global climate change, Europe has gradually experienced an increasing aridity during the last century. The Mediterranean countries and the South-Eastern Europe faced this phenomenon most harshly. One of the best solutions we propose to mitigate local climate is developing rice paddies – temporary artificial wetlands – a common agricultural practice during the communist era in Romania.The Lower Danube floodplain is an environment highly vulnerable to aridity, located at the northern limit of rice crop in Europe. The aim of this study is to identify and map the former and actual rice paddies, considering their ecologically protective and economically productive potential. Rice is a crop closely dependant to groundwater oscillation levels and requires specific planning measures, especially in degraded environments. By maintaining a water layer for several months, rice crops could contribute to mitigating local climate and create suitable new habitats for aquatic birds. Thus, they restore biodiversity and compensate for the loss of some natural wetlands. Local communities could also benefit from rice crops by increasing the number of jobs and crop selling. Rice is a crop with certain positive reactions to climatic particularities of droughty areas. Using digital mapping tools and techniques, we extracted rice paddy areas from topographic maps of 1980 and 1990, orthorectified aerial photographs of 2005 and satellite imagery of 2013 (courtesy of Digital Globe). This step serves to further analyses and evaluation of land suitability to rice cultivation and rice paddy redevelopment in Romania.

Keywords: compensate, loss,natural wetlands

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# PROBLEMS OF LEGAL SUPPORT OF SMALL HYDROPOWER IN THE REPUBLIC OF KAZAKHSTAN

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**Abstract**

The use of renewable energy sources is a key direction for the development ofthe energy sector of the Republic ofKazakhstan.Unlike other environment-friendly, renewable sources of electricity, suchas solar, wind, small hydropower is one of the most economical and environmentally friendly ways togenerate electricity. Today, however, the legal regulationin the field of development of small hydropower stations, mostlybased onnormative legalacts, regulatingrelationsin the energy sphere.A few rulesabout sources of low-energy contained in separatelegislation,are often programmatic,declarative nature,do not contain specific provisions which adequatelystimulated the development ofnon-conventional energy.To achieve the goals set in the article, planned to use the following normative-methodical and basic methodology: used methods and forms of scientific research, comparative analysis of scientific approaches. The methodological basis of research is to apply the methods of dialectics and systematic methods of cognition as general scientific methods of cognition, as well as several private-scientific methods: formal and legal, method of comparative law, systems analysis, etc.

Keywords: renewable energy, alternative energy (power), power, hydropower, environmental safety.

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# THE POLITICS OF GREENING PRACTICE IN CONTEMPORARY RURAL CHINA: A CASE STUDY OF YANG VILLAGE

**Songnan Fan,**
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**Abstract**

This article takes Yang Village as a case to analysis what the specific implementation of the Three-North Shelterbelt Project is like. This village leader Laoyang gets afforestation projects through chasing project and mobilizes all the villagers by the method of economic benefits. While these afforestation projects promoted Yang Village economic income, it also ruins its local traditional pattern of production and living such as raising sheep. The study found the following conclusions: 1) Economy supremacy ideology plays a dual role. Not only does this strategy redirect the publics' attention from environmental protection on to economic development, it also mobilizes the public's will power to participate in such afforestation project. 2) Traditional rural culture and local production practice plays a subtle role in the designing and implementation process of environmental policies, projects and regulations.

Keywords: environment ; afforestation ; The Three-North Shelterbelt Project ; chase project ; rural society ; economy supremacy

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# INFLUENCE OF CLIMATIC CHANGES AND SOIL MAINTENANCE SYSTEMS IN VINEYARDS ON SOIL MICROBIAL DIVERSITY AND HYDROLOGICAL PROPERTIES

**Adrian Şerdinescu,**
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**Abstract**

The last two decades have shown an evident tendency of climate warming in all the vine growing areas of Romania, put into evidence by the increase of thermal regime and by a deficient and unfavorable distribution of the rainfalls. This phenomenon has affect in an obvious manner the water regime of soil and as a consequence its microbiological activity. For this reason in the non-irrigated areas it was necessary to develop new soil maintenance systems in order to reduce this disturbing effect. The aim of our study was to evaluate, under draught conditions, the effect of three different soil maintenance systems: total straw mulching, partial mulching with marc compost and minimum tillage on the water regime and on the microbial biodiversity of soil, in comparison with the classical maintenance system represented by black furrow. The researches were performed during two particularly dry years in a vineyard located in Valea Călugărească center on a molic reddish-brown soil. The experimental data have shown the positive effect of mulching systems on soil moisture, ensuring a 14-20% more humidity as compared with the black furrow system. It was also put into evidence a doubling of soil microbial load and its diversity, especially in case of mulching with marc compost ($15.94 \times 10^6$ microorganisms/gram of soil, as compared with $5.9 \times 10^6$). The microbial load was correlated with the humidity of the soil. The rapport between fungi and bacteria was higher in case of mulching systems, this being a favorable factor for soil biological activity.

Keywords: straw mulching, partial mulching

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# SPACE PROJECTION OF ENVIRONMENTAL PRESSURE ON FORESTS IN ROMANIA

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**Daniel Diaconu**,Faculty of Geography, University of Bucharest
**Adrian Simion,**Faculty of Geography, University of Bucharest
**Laura-Georgiana Comanescu,**Faculty of Geography, University of Bucharest
**Mircea Visan,**Faculty of Geography, University of Bucharest
**Camelia Teodorescu**,Research Institute of the University of Bucharest
**Ion Andronache**,Research Institute of the University of Bucharest

**Abstract**

This study aims to quantify the economic pressure on the forest ecosystems in Romania. The quantification of the deforested areas was made from a database conducted by the University of Maryland, Department of Geographical Sciences, Global Forest Change 2000-2012. In order to quantify the economic pressure on forest ecosystems there were used data on the economic activities that depend on forest cutting. A database was made for the period 2000-2012, which includes the number of companies, the turnover, the profit and the number of employees for the following NACE codes (Classification of Activities in the National Economy): 0220 – Logging, 0240 Forestry support services, 1610 – Wood cutting and planing, 1621,1622,1623,1624 and 1629- Manufacture of wood products, 4673 - Wholesale of wood. The results show an increase in deforested surfaces which reach over 28,000 hectares nationwide and over 4,500 ha in Suceava County. The main result of this study is the large difference between the official and the actually reported data, showing the scale of illegal logging.

Keywords: deforestation, forest fund, territorial management, economic pressure

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# THE IMPACT OF BUSINESS SECTOR DYNAMICS DEFORESTATION IN THE MOST AFFECTED TERRITORIAL SYSTEMS IN ROMANIA

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**Ana Maria Grigore,**Faculty of Administration and Business
**Daniel Peptenatu,**Research Institute of the University of Bucharest
**Cristian-Constantin Draghici,**Research Institute of the University of Bucharest
**Adrian Simion,**Faculty of Geography, University of Bucharest
**Radu-Daniel Pintilii,**Research Institute of the University of Bucharest
**Ana Maria Ciobotar,** Research Institute of the University of Bucharest

**Abstract**

The research aimed to quantify the impact of deforestation on local economies greatly affected by mass cuts of forests. There have been selected the first 10 administrative units according to their total deforested area. The information on the territorial administrative units with the largest deforested areas was obtained by drawing up a statistical database. This was based on the extraction of some time-series of 654,178 Landsat 7 ETM satellite images + characterizing the surfaces covered with forests and the changes occurred from 2000 to 2012 (Hansen et al., Science 2013). The original slide was converted into Stereo 70 projection, cropping the picture corresponding to the administrative boundaries of Romania. In order to quantify the local areas, a spatial join was conducted for each administrative unit, the newly created file containing in the attributes table even the column that sums up the pixels in each administrative and territorial unit. In order to quantify the economic impact of deforestation on local economies there was conducted a detailed database (on NACE code- Classification of Occupations in National Economy) for each territorial system analyzed for the period 2000-2012. The analysis followed the dynamics of turnover, of the recorded profit, of the number of firms and employees. This database was conducted under a research project implemented in the University of Bucharest (UB1375) with the support of BorgDesign. Deforestation contributes to the increase of long-term economic vulnerability and to the decline of some economic activities using a raw material which will be more and more expensive.

Keywords: deforestation, economic decline, vulnerability, territorial systems, regional development

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# PRESERVICE SCIENCE TEACHERS' PERCEPTIONS OF ENVIRONMENT: A METAPHOR ANALYSIS

**Isil Koc,** Istanbul University, Istanbul, Turkey
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**Abstract**

The purpose of this research was to determine preservice science teachers' perceptions of environment through the use of metaphors. The research was conducted with 94 preservice science teachers from Istanbul University in the Fall term of 2014-2015 academic year. The qualitative research method with phenomenology pattern was utilized in this research. For the data collection, a form that included the phrase "Environment is like ……; because ……" was given to participants and required to complete to articulate their conceptualizations of environment. Data were analyzed with the content analysis technique. According to results, participants produced 46 distinct and valid mental images grouped into nine distinct conceptual categories that characterize environment. Based on findings, most frequent metaphors utilized by participants were home, life, breath, human and friend. Overall, the results indicate that metaphors can be utilized as a strong research tool to reveal the preservice science teachers' perceptions on the concept of environment.

Keywords: Environment, metaphor, metaphor analysis, teacher education

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# STUDY OF PHOTOCATALYTIC OXIDATION OF NITROGEN OXIDE BY USING ZINC OXIDE NANOPARTICLES

**Haji omid kalte,**
**Ahmad jafari jonidi,**
**Hasan asilian,**

**Abstract**

The emission of NO*x* into the atmosphere is a great environmental concern because of its detrimental effects on mankind and various ecosystems that should be refined before discharging into the environment. The photocatalytic oxidation method of Nitrogen oxide into nitrogen dioxide for better absorption in solutions is a promising method for removing of Nitrogen oxides.

Keywords: Photocatalytic oxidation , nanoparticles Zinc oxide, nitrogen oxide

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# CHARACTERISTIC EVALUATION OF LIME INCORPORATED NANOZEOLITE AS WARM MIX ASPHALT ADDITIVE TO REDUCE THE PRODUCTION TEMPERATURES

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**Ha-T.V. Tran** Civil and Environmental Engineering, University of Ulsan,

**Abstract**

Warm Mix Asphalts (WMA) has been used as alternative to hot mix asphalt (HMA) that reduces the temperature of asphalt during production and placement, minimizing greenhouse gases while maintaining the mixing advantages of HMA. However, this temperature reduction must not affect the manufacturability and final performance of the mixture. WMA additives allow reducing the production temperature while maintaining mixture workability during the mix process and without compromising the final performance of concrete asphalt. This study targets the synthesis of hydrated lime incorporated nanozeolite as a WMA additive by a sol-gel method followed by hydrothermal process. Hydrated lime in asphalt creates multiple benefits also hydrated lime's ability to control water sensitivity and its well-accepted ability as an antistrip to inhibit moisture damage. Hydrated lime incorporated nanozeolite was characterized by Fourier transforms infrared (FTIR) spectroscopy and Thermo-gravimetric analysis (TGA) and compared with different types of WMA additives (organic, chemical and synthetic zeolite) for mixing temperature.

Keywords: Warm mix asphalt; Synthetic zeolite; Chemical additive; Thermal analysis

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# UTILIZATION OF CORN RESIDUES FOR WATER FILTRATION AT FISH TANKS

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**Abstract**

Filtration has been widely used in re-circulating aquaculture system to remove waste. However, the study of some agricultural residues (corn) usage as the filter medium has not yet been studied. Therefore, the aim of this study is to construct a filter made from inexpensive and readily available corn residues and to analyze its effectiveness in controlling suspended solids that directly impact health of fish through abrasion of gill tissues or indirectly through water quality deterioration. The performance evaluation procedure was carried out in an aquaculture system with production in glass tanks located indoor in laboratory at Faculty of Agriculture, Damietta University, Egypt. The evaluation included three concentrations of total suspended solids (450, 900 and 1350 mg/l); four residues particle size distribution (3.35, 9.53, 12.7 mm and ascending orderto mentioned sizesfrom bottom to top); and four thicknesses of filter layer (9, 21, 33 and 45 cm). The effectiveness of this filter was measured by determining filter efficiency ($\eta_f$), % and filtration rate (FR), ml/min. It was observed that the maximum value of ($\eta_f$), % was achieved at 450 mg/l concentration of total suspended solids, ascending orderto sizesfrom bottom to topand 45 cm thickness of filtration layer.The maximum value of filtration rate was achieved at 450 mg/l concentration of total suspended solids, 12.7 mm particle size distribution and 9 cm thickness of filter layer. Results indicated that this filter is efficient enough to remove suspended solids. Therefore, this milled corn residues filter can be used in aquaculture systems for Nile tilapia, *Oreochromis niloticus* culture system.

Keywords:agricultural residues; corn; filter; re-circulating aquaculture system; total suspended solids; filtration rate.

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# APPLICATION OF WATER QUALITY INDEX FOR TREATED WASTEWATER QUALITY ASSESSMENT: A CASE OF RUSTAMIA STATION FOR SEWAGE CLARIFYING – THIRD EXPANSION, IRAQ

**Eman Shakir Al-Salman,**

**Abstract**

In the current time, one of the main problems facing the world is the problem of getting rid of wastewater, due to bad influences of wastewater on human and environment when thrown into rivers. Water quality of the treated wastewater of Rustamia Station for Sewage Clarifying– Third Expansion was assessed by using the Canadian Council of Ministers of the Environment Water Quality Index (CCME WQI). The model was applied in approach based on the CCME aquatic life guidelines as objectives. Treated wastewater was thrown into Diyala River. The data were collected daily during 2014; eleven variables included in the index calculation which are Total Dissolved Solid, pH value, Chloride, Biological Oxygen Demand, Copper, Iron, Total Nitrogen, Phosphate, Ammonia, Nitrite, and Nitrate. The CCME WQI analysis revealed that the Rustamia Station for Sewage Clarifying– Third Expansion is rated as poor meaning that the conditions of the station are usually depart from natural or desirable levels which eventually effect on the aquatic life. The results reflect that the station for Sewage Clarifying–Third Expansion is still far from the current guideline criteria and, too far from restoration.

Keywords: Copper, Iron, Total Nitrogen, Phosphate, Ammonia

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# AN ECOLOGICAL EVALUATION OF WATER QUALITY FOR MAIN OUTFALL DRAIN AND SOUTHERN MARSH

**Zahraa Zahraw,**

**Abstract**

This study aimed to evaluate the ecological state of Main Outfall Drain and southern marsh and show its validity for aquatic life. For this purpose WQI CCME for protection of aquatic life were used to assess water quality condition in four stations, station 1was at al-fajjer area in begging of the Al-Nassiriya city, station 2 near Al-Holandee Bridge in the center of city, station 3 was 20 km far from the second station, while station 4 at Al-Snav marsh, where sample collected monthly and WQI are calculated for tow season (Summer 2012 and Winter 2013). Fourteen parameter were chosen to applied the WQI; these parameters included Dissolved oxygen, water temperature, Chloride, pH, Total Dissolved Solid, Nitrate, Nitrite, Ammonia, Manganese, Nickel, Lead, Iron, Zinc and Cooper.The results showed high values of Chloride and TDS, as well as high concentration of cooper and lead in all study stations in both seasons, DO, $NO_3$, $NO_2$, $NH_3$, Ni, Zn are exceed the permissible limit once or twice, while other studied parameters were within permissible limit defined by CCME for protection of aquatic life criteria. The final result of WQI ranked between poor-fair where the values of stations 1,2,3,4 in summer are 36.81, 40.76, and 34.16 while in winter 39.87, 40.82, 46.93 and 46.85, respectively. So, this water quality is unsuitably for encouragement the inhabitant of different aquatic life, it may suitable for only the tolerant species

Keywords: permissible limit, inhabitant of different aquatic

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# TÜRKiYE'DE NEGATiF ÇEVRESEL DıŞSALLıKLARıN İÇSELLEŞTiRILMESi SÜRECiNDE ÇEVRESEL REGÜLASYONLAR VE ETKINLiKLERi

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Dışsallık kavramı, gerçekleştirilen herhangi bir iktisadi faaliyetin diğer kişi ve kurumlara karşı ortaya çıkarmış olduğu olumlu ve olumsuz etkiler olarak tanımlanabilmektedir. Oluşan etkilerin olumlu olması durumunda pozitif dışsallıktan bahsedilirken, aksi durumlarda negatif dışsallık kavramı kullanılmaktadır. Üretim ve tüketim faaliyetleri sürecinde ve sonrasında oluşan çevresel problemler de birer negatif dışsallık olarak karşımıza çıkmaktadır. Negatif dışsallıkların piyasa mekanizması tarafından ortadan kaldırılamadığı durumlarda ise kamu otoritesi çeşitli uygulamalarla sorunu gidermeye yönelik bazı düzenlemeler yapabilmektedir. Regülasyon uygulamaları bu düzenlemelerin başında gelmektedir. Regülasyonlar, iktisadi ve idari regülasyonlar olabildikleri gibi, çevresel sorunların oluşmasını engelleyici ya da etkilerini azaltıcı / ortadan kaldırıcı nitelikteki sosyal regülasyonlar olarak da karşımıza çıkabilmektedir. 1980 sonrasında Türkiye'de yapılanmaya başlayan bağımsız idari otoriteler tarafından piyasa aksaklıklarını ortadan kaldırmaya yönelik olarak gerçekleştirilen regülasyon uygulamalarının ne derece etkinlik sağladığı ise tartışma konusudur. Özellikle giderek artan çevresel problemler bağlamında bu tartışmanın önemi daha da artmaktadır. Bu çerçevede, Türkiye'de uygulanmakta olan çevresel regülasyonlar ve negatif çevresel dışsallıkları içselleştirmedeki etkinlikleri çalışmanın temel problemini oluşturmaktadır. Amaç, Türkiye'deki çevresel regülasyonların ne derece etkin uygulamalar olduklarını değerlendirebilmektir. Çalışmada ilk olarak dışsallık ve regülasyon kavramları incelenmiş, ardından çevresel regülasyonlar üzerinde detaylı bir analiz yapılmış ve Türkiye'de çevresel alanda gerçekleştirilmekte olan düzenleyici uygulamalar ve bunların etkinlikleri konuları değerlendirilmeye alınmıştır.

Keywords:dışsallık,regülasyon,çevresel

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