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1. MOLECULAR AND CELL BIOLOGY RESEARCHES AS A VALUABLE MEANS TO ASSESS THE ENVIRONMENTAL CONDITIONS

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ABSTRACT
Among the many methods by which the environmental conditions may be assessed, the molecular and cell biology techniques of laboratories are very important. In fact, some molecules and cells of all living beings are the first levels that come in contact with noxious substances of environment.
According to Burdin's (1985) opinion and our knowledge in this field, the molecular and cellular methods may be classified in two distinct levels or categories: molecular level and cellular level.
Estimation methods of environmental state at the molecular level: energetical index or potential of a single organism or a group of organisms (i.e. population, biocenosis or biota of an ecosystem); steroid metabolism of the cell was studied from biochemical and ecophysiological point of view by Freeman, Uthe and Sangalang (1980) especially in marine animals.
Estimation methods of environmental state at cellular level taking especially in account changes of morpho-anatomical structures and metabolical processes inside the cells: the degree of chromosomal damages under the action of polluting substances, stability of lysosomes and chloroplasts.

Key words: molecular level, cellular level, chromosomes, polluting substance, lysosomes.

2. ENVIRONMENTAL EFFECTS AND THE POPULATION'S HEALTH STATUS

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ABSTRACT
It is well-known that the harmful environmental effects are major determinants of the health status at population level. Nowadays, the word "environment" includes not only the "macro" environment, e.g. ambient air, surface and underground waters and soil but also the "micro" environment, found in buildings, workplaces and homes. So, at the beginning of 21st century, a number of environmental parameters are to be considered in prevention. Among these macro- or micro-environmental effects there are chemical (gases, heavy metals, pesticides, fertilisers etc.), physical (ionizing and non-ionizing radiation), and biological (bacteria, viruses, protozoa, helminths) influences which can increase the incidence and prevalence of certain diseases, and especially their combinations can substantially worsen the morbidity and mortality of exposed persons.

Key words: environmental, biological, chemical, physical

3. THE ENVIRONMENTAL DEGRADATION AND ECOLOGICAL RECONSTRUCTION'S – ECO REMEDIATION

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ABSTRACT
As a path towards a sustainable future for our civilization Local Agenda 21 Processes should play a significant role in linking nature with natural, technical, and social sciences in order to generate knowledge at local community level. The potential role of sciences at local community level is underestimated due to a lack of understanding by local people and also because sciences has isolated themselves in the interest of specialist knowledge protection.
With the opening up of the neglected field of research on the impact of society on nature, space and environment, the interdisciplinary linking together of the social sciences and nature/technical sciences is long overdue. In our contemporary environmental context Local Agenda 21 Processes can take on the form of scientific technology/technique in an effort to bring sustainability to local communities around the Planet Earth. The life style of local communities is a major source of pollution and this process is aggravated by trans-boundary air, water and land pollution, part of which is due to visitors, tourist, armed forces etc. Polluted parts of local communities should be treated remedially, and this is possible in terms of what we call eco-remediation process and techniques.
Present status of environmental degradation, which is well known, was not described due to system approach to the sustainability issues of the Planet Earth.

Key words: pollution, environmental, technology, Planet Earth, eco remediation

4. DETERMINATION OF HEAVY METALS IN WHEAT SAMPLES

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ABSTRACT
Determination of heavy metals in average sample of wheat, harvest 2001, from several parts of Serbia was done. The flame atomic absorption spectrophotometric technique was employed for determination of Fe and Zn, expressed in mg/kg. The contents of Pb, As, Cd, Cu and Mn (in mg/kg) were determined by flameless atomic absorption spectrometer equipped with graphite furnace and mercury with hydride generation. The concentrations of these metals were below the allowed maximum concentration given by national regulations.

Key words: heavy metal, determination, spectrophotometric, absorption

5. COMPLEMENTARY DATA REGARDING THE DISTRIBUTION OF ANORGANIC ARSENIUM IN DEEP WATER SOURCES IN ARAD COUNTY

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ABSTRACT
Romania, like other countries, has some „contaminated" areas by natural arsenium presence. In Arad and Bihor counties, placed in the western part of Romania, some drinkable deep water sources contain arsenium due to geochemical characteristics of soils, well known since 1950.
Villages have usually deep water supplies, especially public artesian fountains, some of these built at the beginning of the XX- th century, and drilled wells older than 30 years, both having depths between 70 and 300 meters.
Because these are the drinking water sources for a great number of consumers – about 35.000 people, the presence of arsenium in drinking water is a public health problem.
Arsenium being one of the potential cause of cancer; we can observe that Arad county is above the medium level found in Romania, regarding cancer incidence.

Key words: contamination, arsenium, geochemical, public health

6. CENTRAL NEUROTOXIC EFFECTS ELICITED WITH THREE ORGANOPHOSPHORUS COMPOUNDS: COMPARISON OF ACUTE AND SUBCHRONIC ADMINISTRATION

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ABSTRACT
The neurotoxic effects of organophosphorous compounds had been amply investigated. There are, however, only a limited number of relevant data concerning neurotoxic effects of these substances exerted on central electrophysiological processes. The aim of the present study was to find out whether

the effects of acute and subchronic administration of three organophosphorous compounds (dimethoate, parathion-methyl and dichlorvos) on the spontaneous and evoked cortical activity are comparable.
In the acute experiments, male Wistar rats were treated with 1/1 or 1/5 LD_{50} per os (parathion-methyl: 22.5 and 4.5 mg/kg; dimethoate: 700 and 140 mg/kg; dichlorvos: 98 and 19.6 mg/kg) and the changes of the cortical activity were recorded for at least 2.5 or 4.0 hours. In the subchronic administration, the animals were given 1/25 or 1/100 LD_{50} (parathion-methyl 0.9 and 0.225 mg/kg; dimethoate 28.0 and 7.0 mg/kg; dichlorvos 3.92 and 0.98 mg/kg) for 4, 8 or 12 weeks after which the animals were prepared and recording was done.
In acute experiments, dimethoate was the substance causing the strongest decrease of the ECoG whereas parathion-methyl induced the least changes. The duration of the evoked potentials was the most affected by dimethoate.
After 12 weeks of administration, parathion-methyl caused the largest alteration in the spontaneous and stimulus-evoked activity of the somatosensory and auditory focus while in the visual focus dichlorvos was the most effective.
The results of the study showed that the changes caused by the subchronic administration of the substances were sometimes equal to or larger than those caused by the acute large doses.

Key words: dimethoate, dichlorvos, ECoG, evoked potentials, organophosphates, parathion-methyl, rat.

7. TRACE ELEMENTS OF THE DRINKING WATER – INCREASE AND DECREASE – FAVORABLE FACTORS OF SOME PERTURBATION

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ABSTRACT
There are two sources for the trace – elements in the drinking water: natural and man-made.
Some trace elements, such as lead, mercury, beryllium, nickel, cadmium may elicit considerable toxicity, but other trace elements, including manganese, cobalt, zinc etc. have been shown to be essential to normal health in human beings.
Numerous epidemiological studies have demonstrated significant association between drinking water composition and disease–specific morbidity, e.g. cardiovascular and ischemic hearth disease.

8. ENVIRONMENTAL IMPACT ASSESSMENT OF THE MINING ACTIVITY AT THE PUZDRA MINING PERIMETER - BELONGING TO E.M LESU URSULUI – ROMANIA

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ABSTRACT
The Puzdra perimeter belongs to EM Lesu Ursului - Bucovina and was concerned with the extraction of polymetallic ore with cupriferous impregnation.
The environmental impact assessment methodology, adopted by the present study, consists in the following stages:
- assessment of the polluting indices for each type of pollutant, I_{pi}, of the environmental factors: water, air, soil, fauna, vegetation and human settlements,
- according to the values obtained for the pollution indices calculated, the NB_i and the NB_j (mean) were established for each pollutant (where NB means environmental mark).
- the construction of the environmental state.

Key words: Puzdra, ore, cupriferous, dump, waste, pollution, environment.

9. EFFECTS OF ACUTELY ADMINISTERED HEAVY METALS ON THE EVOKED ACTIVITY RECORDED FROM THE CORTICAL AND THALAMIC SOMATOSENSORY CENTER IN RATS

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ABSTRACT
Several of the heavy metals emitted into the environment by human activities are known or supposed to be neurotoxic. Lead used to be an air pollutant originating from car fuel additives. Today, manganese is being used for the same purpose in several countries, resulting in mass exposure. Mercury is released in various industrial procedures. The aim of this work was to study the effects of these three metals, given acutely to rats, on the stimulus-evoked activity of the central somatosensory system.
Male Wistar rats were anesthetized with 1000 mg/kg urethane, the head was fixed in a stereotaxic frame and the left hemisphere was exposed. Somatosensory response was evoked by electric shocks (ca. 3 V, 0.05 msec) applied to the whiskery skin area via a pair of needle electrodes. One series of 20 stimuli at 1 Hz repetition frequency was delivered every 10 minutes and the evoked activity was recorded from the thalamic relay nucleus and the cortical focus. Recording and evaluation was PC-based. After an hour of control recording, one of the metals was given i.p. and further records taken for ca. 2.5 hours.
The most typical effect was the increase of the evoked potential amplitude both in the cortical and thalamic recording site. The effect of Pb^{2+} was the strongest, followed by Hg^{2+} and Mn^{2+} was the least effective. The latency of the evoked responses was little affected.
It is concluded that the amplitude increase resulted possibly from a common, but specific, effect of the three metals and not from their general toxic property.

Key words: lead, mercury, manganese, neurotoxicity.

10. ON THE ALIEN AQUATIC SPECIES IN ROMANIA

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The theme of immigrant species into some aquatic basins, marine or fresh water, is certainly challenging as it triggers discussions and extremely profitable interpretations, often contradictory, which should finally find answers to a multitude of complex problems. Who is the newcomer? Where does it come from? How? When? Why? For how long? What could the consequences be? Some immigrants have produced major disturbances in the structure and functioning of ecosystems. A few of these issues are discussed in the paper. The author presents some ecological problems concerning the alien aquatic species introduced in the Romanian aquatic ecosystems, including coastal marine waters (all the species immigrated in the Black Sea, described for other sectors of the sea but not yet recorded at the Romanian littoral).
The multitude of pieces of information, some of them with a high degree of uncertainty, lead to the conclusion that in the past five decades populations of some taxa originating from remote biogeographical regions of the globe have penetrated and settled in the Black Sea basin, and its paramarine annexes, as well as in the tributaries, some of which are interconnected. While new species have penetrated, many autochthonous forms have either disappeared or decreased in number or surface

of inhabited zone as a result of their competition with the newcomers aggravating the ecological conditions and accelerating the changes which occur all over the world at present.
The author considers that the immigrants' list is incomplete; besides omission, the list of exotic species may contain some errors which may have several sources, as follows: 1) erroneous identification of species; 2) small number of specimens in the analyzed samples (sometimes the description of an alien species is made only after one accidentally met specimen or after larval stages); 3) some species are quoted only once, without subsequent confirmation; 4) some exotic species are represented by small forms (bacteria, fungi, microphytic algae – ultraplankton, ciliate, etc.); with the current working technique, these forms, belonging to the natural fund of biodiversity of an area, cannot be always observed by the researcher, and therefore they can be discovered very late.
The about 115 alien species listed by the author are classified in the paper according to several criteria, as follows:
Pathways of penetration in Romanian waters/black Sea: 1) unintentional or accidental (a. natural ways, 2/3 from the recorded new species; e.g. Anodonta woodiana and Corbicula fluminea recently penetrated into the Danube, probably through the Rhine-Danube system; b. passive maritime transport by ships, in ballast waters – Mya arenaria, Rapana venosa, Mnemiopsis leidyi, Beroe ovata, Callinectes sapidus, etc., or attached to the ship hulls – Mercierella enigmatica, Balanus, Doridella obscura, etc., and c. clandestine way, as companion forms – bacteria and various parasites, for some species intentionally imported) and 2) intentionally brought by man for aquaculture, aquaristic and scientific experiments.
Ecological criterion: fresh water forms, approximately 38% and marine forms, approximately 62%. Among the fresh water species, 7% conquered the reference area by a natural way and 93% were introduced by man for aquaculture; among the marine species the situation is exactly reverse: 93% are accidental species and only 7% those intentionally introduced.
AAS origin places: marine species are dominated by the Atlantic-Mediterranean immigrants, North-American ones, which together with the Indo-Pacific ones form 85%. For the fresh water fauna, the most introduced species proceed from Asia (37%) and North America (29%).
AAS success: 1) species penetrated long time ago, naturalized in the Black Sea: a. species whose populations have developed up to a point and then began to decline, leaving evident traces – shells in thanatocoenosis (Pecten maximus, Pecten jacobaeus); b. ubicuitar species (balanus improvisus); 2) species of great success, with major ecological effects and explosive developments of their populations (Mya arenaria, Rapana venosa, Mnemiopsis leidyi and Rithropanopaeus harrisii); these species have well developed populations which in the "exponential" stage of their proliferation have produced profound ecological changes in the ecosystems they occupied, excluding by competition the populations of some native species; 3) species economically successful, cultivated mainly in fresh water farms (Aristichthys nobilis – zooplanktophage, Ctenopharyngodon idella – phytophage-macrophyta, hypophthalmichthys molytrix – phytoplanktonophage, Mylopharyngodon piceus – mollusks consumer, salmo gairdneiri irideus – basic pisciculture species in mountain areas, Salvelinus fontinalis – naturalized in Romania, in mountain strea with very cold water, where the native trout does not resist); 4) species with reduced but permanent populations, limited especially to the coastal shallow areas (Eriocheir sinensis, Malacobdella grossa, Rithropanopaeus harrisii, Scapharca inaequivalvis); 5) species with populations sporadically present in benthos, plankton and nekton (all planktonic copepoda, but also the benthal forms Mercierella cleistoclea, Chthamalus stellatus); 6) species with populations extending from the arrival area in the entire basin by conquering the entire favorable biotope (Andonata woodiana and Corbicula fluminea in the Danube, then the marine forms Doridella obscura, Leucothea multicornis).
Taxonomic criterion: 8.7% vegetal organisms (generally speaking) and 91.3% animals; among animals, 37% are vertebrate (fishes 33% and mammals plus reptiles 4%) and 63% invertebrate. Among th invertebrate, the Crustaceans and Molluscs are the most numerous as species number; they are followed by Hydrozoa, Ctenophora, Vermes and other 3 groups (Bryozoa, Entoprocta and Tunicata – with a minor part as species and importance).
Based on the dynamics of alien species accumulation into the Romanian aquatic ecosystems, the author considers that the process could continue quite rapidly; anyway, a more attentive checking is absolutely

necessary. The scientific problems of alien species in the Black Sea are still open and the lesson learned from the stories of the Black Sea as a receptor for new exotic species can be summarized as follows:
- the process of penetration is still open – attention to the toxic and harmful species;
- the impact of alien species is complex and unpredictable;
- species biodiversity monitoring is absolutely necessary, a special attention must be directed mostly to the proper monitoring of microflora and microfauna;
- legal measures and regulations are necessary for limiting the penetration of immigrants;
- training human resources in biological taxonomy and systematic is of high priority; the old generation of marine botanists and zoologists is getting reduced and in order to understand correctly the aquatic ecosystem and what must be done for their protection, we have to know deeper their biota, only through young educated specialists, taxonomists – marine and freshwater biologists.