

CURRENT STATE OF POLLUTION OF WATER, SOIL AND AIR IN THE REPUBLIC OF SERBIA WITH OVERVIEW TO THE IMPORTANCE OF INDUSTRIAL ECOLOGY

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ABSTRACT

Endangering environment and its protection have been representing a problem for the mankind throughout decades. Disappearance of harmony between man and nature has created numerous dangers which degrade the accomplishments of the civilisation achieved so far, cause enormous damaging effect on people, their lives and health, body integrity and many other values. Therefore, the significance of the environmental protection is highlighted as the most important global challenge of the modern society, especially in the field of industrial ecology. Thus, various issues from and related to the field of environment form an important part of the activity of EU, that has lately been undertaking more comprehensive and more intensive political actions in this domain. The authors studied the synergy of the legislative and the actual state of pollution of soil, water and air, industrial pollution on the basis of exact parameters due to the particular territory of the Republic of Serbia, assessing the quality of legal provisions and their applicability, pointing to possible failures in legislation and in implementing these provisions. They also pointed out that environmental crime today is considered to be a serious and widely spread phenomenon which has got to be suppressed on transnational level. For that matter, criminal-legal protection of environment is a final, but also a very efficient and more than a necessary measure.

Keywords: environment, endangering the environment, industrial ecology.

AIMS AND BACKGROUND

Nowadays, there is an abundance of contradictions. On the one hand, the contemporary urban, economic development and the general technological advance of unimagined

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limits, together with the application of new technologies, have enabled better and more humanly life and work conditions for the mankind. Yet, on the other hand, those activities have drastically endangered the harmony between man and nature, which humans, as well as all other living beings since the beginning of time, have had close and unbreakable bond with. Namely, the pollution of basic natural resources of wildlife, i.e. industrial pollution of air and water, unplanned or uncontrolled deforestation and using that space for farming land, global warming of the planet and climate change, large accumulation of various wastes in all three states of matter, including the radioactive waste, destruction of certain flora and fauna, are all just a part of the negative effect of the suicidal activities of humans, which degrade the accomplishments of the civilisation achieved so far, seriously endangering their survival. Concerning the aforementioned, the awareness of the need of environmental protection has been prevailing, manifested mainly in the search of ways and manners to harmonise the man with the surrounding nature. This perception is in fact ensuring the necessary prerequisite for the survival of humans, i.e. society as a whole.

The authors studied the synergy of legislation on global level and in their country and the actual state of pollution of land, air and water, especially in area of industrial pollution on the territory of the Republic of Serbia, assessing the quality of legal provisions and their applicability, pointing to possible failures in legislation and in implementing these provisions.

Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control is very important act, concerning integrated pollution prevention and control, which is a codified version of the regulations in this area. Seveso II Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances, Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants, Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC and Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme are important, too.

The Rio Declaration on Environment and Development of the United Nations was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The significance of the environment has been highlighted as a part of European legal heritage ever since the early 70's of the twentieth century, having got a place in EU founding acts, in the Single European Act in 1987. Today, the provisions from this field make almost the third part of the EU heritage. Adopting the Convention on the Protection of Environment through Criminal Law has for the first time set up a comprehensive criminal-legal environmental protection of international extent.

The Treaty of Rome (1958) did not foresee any liability for environmental policy. The member states were dealing with environmental problems on national level. As an international problem, the environmental pollution definitely could not be solved efficiently on national level. Since, along with it, various national measures and production norms relevant to the environment were appearing as an obstacle to the trade inside and outside the Common market, the initiative for handing environmental policy on the level of the Community was getting bigger. Immediately after the first Conference of the United Nations on the Human Environment, held in June 1972, at EC Summit in Paris, it was requested from the Commission to work on an action programme of environmental protection. As a legal basis, general provisions of the EC treaty were taken: – Art 2. which enlisted ‘constant and balanced economic expansion’ into EC tasks, – Art 100 (today Art 308 of EC Treaty), which foresees the harmonisation of national legal provisions relevant for the internal market. Legal acts adopted on this basis could be enacted by the Council only unanimously. The necessity of the common environmental policy was thus recognised already in the early seventies. The extensive regulations of EC on the environment were made, containing many normative orders and prohibitions¹. The development of environmental policy and EU environmental rights in general can be also traced through the development of positions and role of these issues in EC, or EU, founding acts. The fact is that at first the necessary measures were taken exclusively for urgent problems in certain areas, later to gradually pass onto a planned realisation of goals within the environmental protection policy. The environmental policy was not built into the contractual structure of the Community until the Single European Act in 1987, only later to expand its range, or at least indirectly change it, by the Treaty on European Union (1992), the Maastricht Treaty (1992), the Amsterdam Treaty (1997), the Treaty of Nice (2003) and finally by the Lisbon Treaty (2009). Until 1987, there have been 200 adopted regulations, based on what then used to be Article 100 (later 115, or 135) or based on Article 235 of the Treaty on European Union. Nonetheless, the lack of clear legal basis for the EU environmental policy was exposed to criticism of a part of member countries². EC has obtained specific authority for the environment only with the revision of the treaty by the Single European Act (SEA, 1987), introducing a separate chapter titled ‘Environment’ (Articles 130). The commission had the possibility to propose regulations based on those provisions in different fields, with the aim of providing protection and improvement of the quality of the environment, rational usage of natural resources and protection of human health. Further strengthening of the position and role of EU environmental policy was enabled by the Maastricht Treaty (1992), including the improvement of ‘sustainable and non-inflationary growth’, together with respecting of the environment, among its primary goals (Art. 2) Already in the Preamble of the Treaty it is stated that: ‘Determined to improve economical and social progress of our nations, taking care of the principle of sustainable development, within the framework of creating internal market and strengthening cohesion and environmental protection,

as well as that the application of policy that will enable the improvement of economic integrations is in accordance with progress in other fields.’

Provisions of the Amsterdam Treaty (1997) contain the principle of stable economic development, where EC is obliged in general to tend to high-level protection and quality improvement of the environment (Art. 2 of EC Treaty) and to consider its interest in all measures (Art. 6 of EC Treaty).

The Treaty of Nice (2003) does not basically change the primary, previously defined, provisions related to the question of the environment. However, the changes in the voting system can also be considered as certain contribution to the change in environmental policy (referring to the qualified majority voting system). A number of different EU institutions have certain authorities in the field of environmental protection. Some of them are of a general character with formally defined authorities, while others deal primarily with environmental issues, such as: European Parliament³; Committee on the Environment, Public Health and Food Safety⁴; Council of the European Union/Council of Ministers⁵; European Commission⁶; European Investment Bank⁷; Court of Justice of the European Union⁸; European Ombudsman⁹; European Environment Agency¹⁰; European Chemicals Agency¹¹, and Statistical Office of the European Union¹².

The Assembly of the Republic of Serbia has rendered the Law on amendments to the Law on Environment Protection¹³, which has improved the Law on Environment Protection¹⁴, and also the Law on Fund for Environment Protection¹⁵, the Law on Waste Management¹⁶, the Law on Protection of Nature¹⁷, a number of laws as well as several of by-laws directed towards the environment protection. Our current law in this field is in harmony with basic regulations of European Community (EC) such as: Directive 96/61/EC as of September 24, 1996 on integrated prevention and control of pollution according to implementation of priorities of The Sixth Environment Action Programme of the European Community (IPPC); Directive 96/82/EC (SEVESO II) as of December 9, 1996 on the control of major-accidents hazards involving dangerous substances; Directive 97/11/EC as of March 3, 1997, which changes and amends Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment; Directive 2001/761/EC (EMAS) as of March 19, 2001 on eco-management and audit scheme; Directive 2003/4/EC as of January 28, 2003 on accessing information from the field of environmental protection; Directive 2004/35/EC as of April 21, 2004 on environmental liability with regard to the prevention and remedying of environmental damage; Rule 166/2006/EC as of January 18, 2006 contains amendments to Directive 91/689/EEC and Directive 96/61/EC; Directive 2008/1/EC as of January 15, 2008 on integrated pollution prevention and control. The law provides exercising peoples rights to living and development in a healthy environment. Integral system of environment protection implies balanced ratio of economic development and environment in the Republic of Serbia, and it is constituted according to Article 2 of the Law by measures, conditions and instruments for: sustainable management, preservation of natural balance, integrity, diversity and quality

of natural resources and conditions for the survival of all living beings; prevention, control, diminishing and remedying all sorts of environment pollutions.

According to the European Partnership Document, approved in January 2006, is foreseen an action to further develop and implement the National Water and Sanitation Strategy and the Rural Strategy for Water Supply and Sewerage; as well to develop and start implementing a strategy for progressive alignment to the acquits communitarian in the area of water supply and sanitation. There are many laws and directives that protect the world oceans, rivers and lakes from unnecessary water pollution. In 2000, the EU Water Framework Directive was enforced for all EU member countries. This directive considers each river basin as one planning unit.

The all-inclusive criminal-legal environmental protection on international scale has actually happen with the adoption of the Convention on the Protection of Environment through Criminal Law, adopted by the Council of Europe in Strasbourg, dated 4th November 1998, which highlights the need for establishing criminal responsibility in cases of 'serious' pollution or bringing the environment in danger. The Convention includes: description of criminal acts and violations against environment – divided in 3 groups, depending on the estimated degree of danger; establishing rules in criminal procedure for acts referring to the environment; the authority issue, especially when it is about the over-contamination; the importance of international collaboration and implementation of important acts into national frameworks; joint, mutual responsibility, where it is not possible to detect the responsible one, etc. Among other things, the Convention also contains provisions that clearly define certain concepts (Art. 1), name perpetrators (Art. 2–4), establish the authority of national courts, determine sanctions (Art. 6–8), determine the principles of responsibility for legal persons, principles of coordination and collaboration, etc. The measures for the protection of interests of groups that can be affected by damaging the environment, and determination of certain rights related to their participation in the environmental protection are dealt with in a special section¹⁸.

In the given context, it is important to mention a very significant document which is at the same time the primary source of EU law, which establishes certain rules in the field of criminal liability, and that is the Directive 2008/99/EC on the Protection of Environment through Criminal Law, dated 19 November 2008, which prescribes the measures that member states should take in the field of criminal law, for the more efficient environmental protection. This Directive was put into force on 26 December 2008, and it was supposed to be implemented into the legislations of member states until 26 December 2010. The Directive prescribes minimum requests that member states should build in their criminal-legislative frameworks, with the option to freely maintain or introduce stricter measures of protection¹⁹.

RESULTS AND DISCUSSION

Protection of the environment and its improvement definitely represent one of the most significant problems burdening the modern society. Using new, powerful sources of energy, increased scientific-technological development, construction of a large number of industrial objects and urban areas, have all caused serious endangering and destroying of natural resources, which destabilises the preservation of healthy environment and, at the same time, the balance of the relationship man-surroundings, i.e. nature. Under the protection of human environment, we are to understand: preservation of nature and natural resources; purity of air, water and earth; preservation of flora and fauna; protection from contamination from all types of ionising radiation, noise pollution, vibrations, etc.

Directive 2008/1/EC and Directive 96/61/EC stipulate requirements to be fulfilled by plants and activities implemented in industry and agriculture. The directives stipulate prevention measures or, if the aforesaid measures are not feasible, those aimed at reducing emission into air, water and soil, as well as waste-related measures. The harmonisation of measures stemming from the provisions of those directives is ensured by an explicit term stipulating that the provisions are to be implemented without prejudice to Directive 85/337/EEC and to other relevant regulations enacted by the Community. Conditions from the licence are to include the limit values of emissions, which must be based on the so-called best available techniques (BAT, according to the definition provided by the Directive). Annex IV to the Directive defines twelve factors to be taken into account, generally or specifically, when defining the best techniques available, considering the amount of expenses and benefits from the application of a specific measure, as well as precaution and prevention principles. With a view to facilitate the functioning of the BAT-related system, the EU Commission has organised an exchange of information between member-states experts, industry and environmental organisations. The activities related to this are coordinated by the European IPPC bureau, within a joint EU research centre in Seville (Spain), and their activities have resulted in the adoption and publication of referential BAT documents (the so-called BREFs). The operators of industrial plants defined in Annex I to the Directive are obliged to obtain a licence from the relevant authorities. The number of industrial plants in the EU which are subject to the regime established by the Directive is around 52 000. In order to obtain the licence, operators ought to fulfil the stipulated requirements, such as: taking all the required contamination prevention measures and, especially, applying the best available techniques (producing the least waste, using the least dangerous substances, enabling recycling and reuse of produced substances, etc.), preventing big contaminations, preventing waste or ensuring that it is recycled or disposed of in a manner that is the least detrimental to the environment, using energy in an efficient manner, ensuring the prevention of accidents and damage and the restoration of all the locations into their original state after the closing of plants. The decision on the issue of a licence must also include different specific requirements to be

fulfilled by the operator, such as: limit emission values for contaminating substances, measures required for the protection of soil, water and air, measures related to waste management, measures to be taken in extraordinary circumstances, measures for the minimisation of cross-border long-distance contamination, monitoring measures and all the other necessary measures.

On the basis of the below-stated specific data on industrial contamination in the territory of the Republic of Serbia, the quality of the local legislation harmonised in this field so far has been analysed.

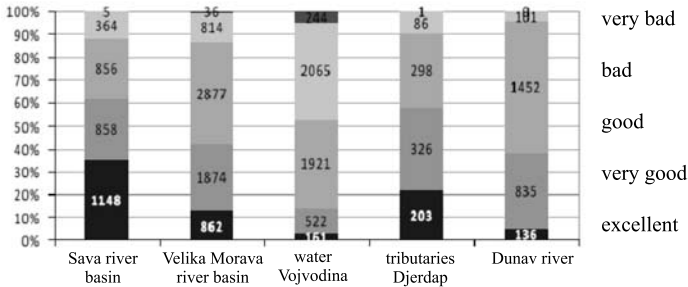


Fig. 1. Basin quality analysis within the period 1998–2010

The analysis of specific water contamination parameters in the territory of the Republic of Serbia in the previous period shows a mild tendency of reduction of contamination due to the raised ecological awareness and especially corporate responsibility in the domain of industrial ecology, which certainly confirms the quality and applicability of legislation in this field; however, sporadic accidents confirm that stricter sanctions should be applied to critical events.

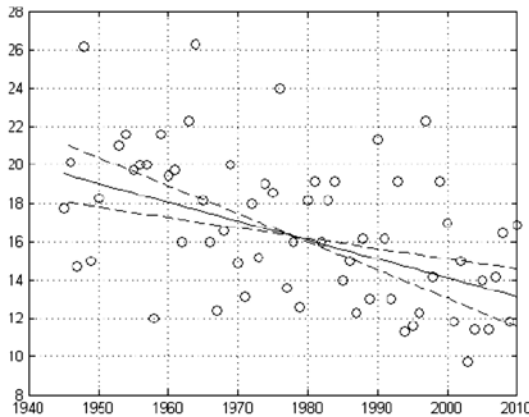


Fig. 2. Linear regression or non-parametric trend test

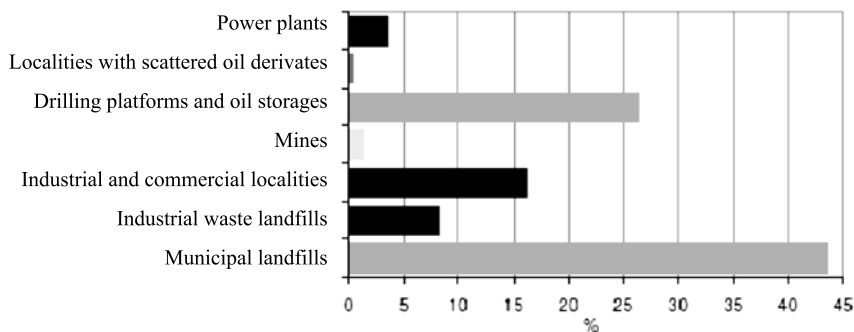


Fig. 3. Managing contaminated locations (contamination of soil)

On the basis of scientific measures and statistics, it has been perceived that the share of the main types of localized contamination sources in the total number of identified localities in the Republic of Serbia is the following: public utility waste dumps – 43.7%, oil drills and storages – 26.4% and industrial and commercial localities – 16.3%. The share of industrial branches in localised soil contamination in our country is the following: 59.2% – oil industry, 15.2% – chemical industry and 13.3% – metal industry. Some positive progress has certainly resulted from newly-enacted regulations, which form a basis for the establishment of soil monitoring and the inventory of contaminated locations.²⁰ In 2010, the number of programmes monitoring the degree of exposure of soil to chemical contamination in urban zones increased, while in 2011, a methodology for establishing the systematic monitoring of the condition of soil was drafted. In 2012, soil monitoring at the national level will be established for the first time, which proves that legislation and effective measures should complement each other for the purpose of achieving the projected goals. For example, ‘ the soil can be used as the process of *tertiary* wastewater refinement (refined in the process of secondary refinement), primarily aiming to *eliminate nutrients* (which is more advisable for the conditions in our country, primarily in regard to our climate; or as the process *secondary* refinement, for eliminating organic pollution from wastewaters (remark: there were attempts in our country to use refinement techniques by soil for secondary refinement of communal wastewaters but the results were poor). In conformity with legal platform we can see three most widely represented refinement systems: (i) irrigation of soil with wastewater; (ii) quick infiltration of wastewater through soil, and (iii) soil overflowing with wastewater. In the world the use of natural swamp ecosystems (or artificial swamps; the so-called wetlands) for wastewater refinement is rather rare; although here the use of the so-called wetlands has been advocated lately. Aquaculture, the general term for lagoons where water plants and fish, which are later used for producing fodder or used in industry, are grown and can be used for wastewater refinement; whereas the accent is still on the growth of biomass, and less on the effect of wastewater refinement, which is as often

rather poor. In fact, in Vojvodina, for the village of Glozan since a facility for refinement of fecal waters by using the system of wetlands, which uses in its technological process a plant, marsh reed has been in exploitation November 2004. The facility for wastewater refinement in Glozan has been dimensioned for sewer network in a village designed for 2800 inhabitants, with a maximum daily flux of wastewater of 200 l/per inhabitant daily.²¹ Technical-technological procedure of refinement is based on wetlands with marsh reed. This method uses a plant whose functions have the role of a purifier. For the refinement of wastewater in the village of Glozan regular marsh reed (*Phragmites communis*) is used, whose natural habitat is on the location of the facility which was built. The system has refinement through three consecutive wetlands. Wetlands have the function of refinement and improvement of the effects of refinement. In the first phase wastewater goes, after passing through coarse grid, into sedimentary wetland, the first wetland. In the second phase wastewater in the process of filtration moves to the second wetland, the wetland for refinement. In the third phase water comes to the wetland for improvement of the effects of refinement, and after that through an outflow it flows into the recipient – canal B12 melioration system for drainage Begec²².

When it comes to air pollution in the Republic of Serbia it can be seen that the pollution is accumulated by several pollutants, especially in industrial cities. On the basis of scientific measures and statistics in Figs 4 and 5, it has been perceived that emissions of polluting substances in the air are caused by sulphur oxides, nitrogen oxide and powdery substances. The cities Obrenovac and Kostolac belong to the group of more polluted cities, especially by sulphur and nitrogen oxide. Emissions of sulphur and nitrogen oxide, and powdery substances, most often occur in energy sector, followed by occurrence in production and processing metals, and in mineral industry. Next are chemical industry, waste and wastewater managing, paper manufacturing and producing of wooden products, intensive livestock farming and fishing, animal and plant products and other activities.

With analysis of these parameters it has been noticed that although legislative gives clear guidance, which is the way of ecological behavior is correct, especially in industrial ecology, sometimes accidents happen. It is this that makes criminal legislation so important in this field. Environmental crime refers to all actions which violate the provisions of environmental regulations and cause significant damage or endanger the environment and people health. The most common manifestations of this kind of crime appear as illegal emissions of substances into the air, water or earth, illegal trade of animals and plants, illegal trade of substances destroying the Ozone layer or the trade of hazardous waste, etc. Environmental crime brings enormous profit to its perpetrators, it is hard to detect and causes extremely negative consequences on the environment. Today it is considered a serious and widely spread problem that has to be dealt with on European level²³.

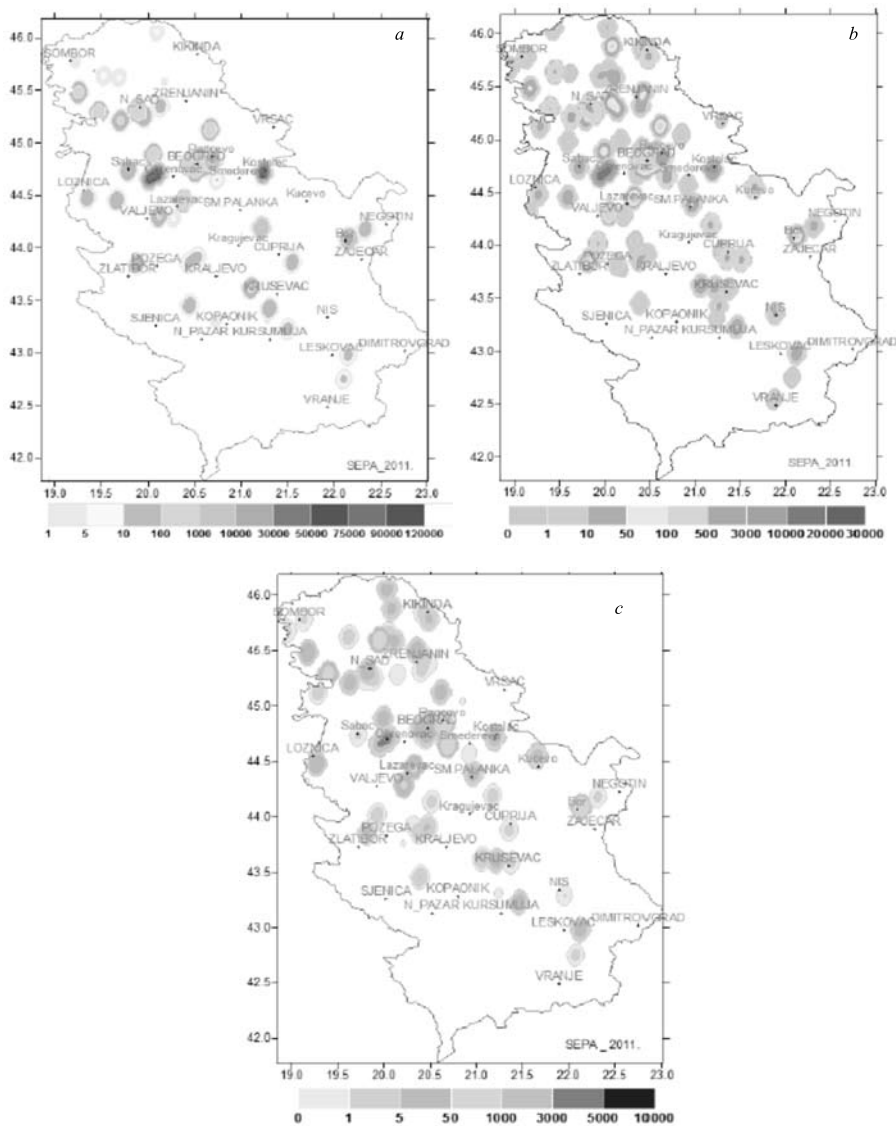


Fig. 4. Emissions of polluting substances in the air: review of pollution in industrial cities (a) sulphur oxides emission (b), and nitrogen oxides emission (c)

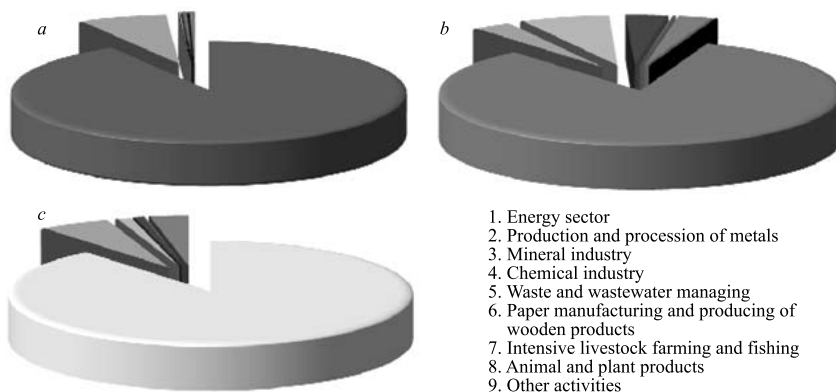


Fig. 5. Emissions of polluting substances by sectors: sulphur oxides emission (a); nitrogen oxides emission (b), and powdery substances emission (c)

Effective establishment of ecological-legal regulations is essential for preventing this kind of crime, and with it, for the preservation of healthy environment. In the earliest stages of development of ecological right, environmental violence was sanctioned by not very strict measure and sanctions of the administrative-legal and civil-legal character. The legal regulations themselves had little or no influence on companies, state structures and civilian individuals to respect ecological norms²⁴. Their following and regular enacting has immense importance for the preservation of the environment and all natural resources. The awareness on the level of an individual, the society itself, the countries and transnational creations has significantly improved, and today we can confidently say that environmental crime is a serious international problem that is increasing, and that can be indentified not only as the contamination of air, water and earth or exploiting wildlife for commercial purposes leading to its extinction, but also in developed countries, as simple dropping of the litter, graffiti drawing and vandalism in public places²⁵.

Nowadays, the need for taking legal measures in this field in related to serious analyses and estimates that endangering the environment by criminal acts is a problem which causes significant damage to the environment on global level. Furthermore, these acts are suitable for realising major profit for the perpetrators with minimum risk of detection and criminal pursuit, especially when talking about criminal acts on international scale.

Organised crime is considered as a specific problem. Transnational nature of environmental crime, continuous actions of organised crime groups and failures of governments of many countries to prevent these forms of crime have conditioned the necessity of the reaction on international level, and not only in European institutions, but also in the UN – especially UN Office on Drugs and Crime – UNODC. Organised crime tends to establish, maintain and expand its diverse activity to all those areas of social life where certain benefit can be gained. Environmental crime in its nature

often has transnational character and can appear as a special type of organised crime, especially in activities of transnational companies. In those cases, it is manifested as trafficking of natural resources, illegal trade of flora and fauna, illegal/unauthorised fishing, illegal exploiting and trafficking of minerals and precious stones, wood or hazardous waste, beside problems like pollutions of water, soil and air²⁶. These solutions practically establish the basis for the unique criminal-legal environmental protection within the European right and the basis for the responsibility of natural, but also legal persons for criminal and other criminal offences, administrative offences, as the Convention refers to them. The base of this Convention of the Council of Europe is the realisation of the following proclaimed goals: the need to manage common criminal policy with the aim of protecting the environment, the request for life and work of people, as well as flora and fauna and other resources to be protected by all means available, including criminal-legal measures; the need to overcome the uncontrolled use of technology as well as excessive exploiting of natural resources leading to serious risks regarding the environment, by taking measures coordinated among the member states of the Council of Europe and other countries who sign, i.e. ratify this Convention; the necessity to prescribe the violation of principles of the environment as a criminal offence subject to proper sanctions, and criminal pursuit and sanctioning the perpetrators in the field of the environment, with the aim to strengthen the international collaboration²⁷. The Directive does not refer to the measures concerning the processing part of the criminal law, not does it refer to the authorisations of prosecutors and judges. Based on the provision of Art. 3 of the Directive, member states are obliged to make sure that certain actions and procedures are considered criminal acts, if done unlawfully and on purpose or out of the least serious negligence. The introduction of penal sanctions aims to provide effective environmental protection on the level of member states. The activities that are harmful for the environment will understand 'effective, proportional and non-stimulating sanctions'. The stated Art. 3 of this Directive contains a catalogue of criminal acts that are to be sanctioned according to the criminal law, and that cause damage to air, earth, water, animals or plants or lead to injury or death of a person: emission or introduction of ionising radiation; unlawful action during management, transport, storage, etc., of waste, including hazardous waste; illegal work of plants where dangerous activities are performed, and dangerous substances or preparations kept or used; illegal shipments of waste; illegal production, treatment, storage, usage, transport, export or import of nuclear material or other dangerous radioactive materials; illegal possession, taking, damaging, killing or trading of samples of protected wild species of flora and fauna; trade with protected wild species of flora and fauna; major damage of habitats in protected areas; illegal trade or usage of substances which damage the Ozone layer.

Societies in transition, but also societies with developed economy, can experience the conflict between the economical progress and the interests of environment. In situations when there is a conflict between the interests of development of a region by 'dirty' technologies and the interest of protection of human health and environ-

ment, the countries have the right to the wide estimate field by balancing economic and ecological interests, which should certainly be taken into account. The countries should achieve a righteous relationship between the interests of individuals and of community, and one of the positive obligations of the country in that direction is, for instance, to effectively control the work of factories through work permits and beneficial sanctions due to not respecting the national regulations on pollution²⁸.

CONCLUSIONS

The environment consists of the natural surroundings, i.e. air, water, earth, flora and fauna, climate, ionising and non-ionising radiation, vibration, noise, but also of the surroundings built by man, i.e. various objects, settlements and infrastructure. Man, as every other living being, since his creation until today, has had a tight mutual bond with animate and inanimate nature around him.

The evolution of man as a conscious being was manifested at first in searching for ways and manners to harmonise with the nature around him, in order to provide conditions necessary for his own survival. With every invention (starting with the farming tool and a wheel, all the way to the modern information technology) man has been realising his eternal wish to harmonise nature with his needs. While contemporary urban, economical and technological development has offered humans great benefits, the industrial pollution of air and water, uncontrolled deforestation and turning of forests into farming land, destruction of the Ozone layer and global warming of the planet followed by climate changes, accumulation of various wastes, including the radioactive one, as well as the disappearance of plant and animal species, are only some of the negative effects of human activities which seriously endanger our own survival.

Various environmental issues occupy a significant part of EU activities. The efforts of the European Union regarding more intensive and more comprehensive political actions in this domain coincide with the emphasised tendency of strengthening the awareness of the importance and global consequences of the degradation of environment. In our country that activities include the upcoming adoption of implementing regulations which the provisions of certain EU regulations be fully and completely transferred into national legislation. It is planned to take practical measures adopted to implement the regulations, including the creation of a data-base the Seveso II plants, the national plan, municipal plan of treatment and treatment plan in case of accidents with transboundary effects, etc.). particularly difficult to consider the application of the integrated Prevention and control of environmental pollution because it is necessary take the necessary measures to ensure compliance with the conditions prescribed standards or their adjustment to the real possibilities of economy and society.

Emphasising the need to establish criminal liability in cases of serious pollution or endangering the environment is based on the estimates that endangering the environment by criminal acts is a problem which is every time spread more widely,

and which causes obvious damage to the environment on global level. Thus, lately some discussions have been going on, which point out the necessity of establishing measures for prevention and sanctioning of environmental crime, since the number of actions which endanger and degrade the nature has doubled.

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