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PREVENTION OF THE ENVIRONMENTAL RISKS FOSTERING IMPLEMENTATION OF THE REACH REGULATION IN THE REPUBLIC OF SERBIA[****]

Abstract

The chemical industry has a great importance in implementation the sustainable development strategy. The environmental protection from different risks from the mining and metallurgical industry, in which the use of chemical is the basic precondition for production, is the primary goal in the EU and Serbia, also. The European Commission's specific Chemical Strategy (Registration, Evaluation, and Authorization of Chemicals-REACH) legislation is the one among many of the most important environmental regulations. Hence, is it an urgent need of policy makers in Serbia and all stakeholders to understand how the future REACH implementation could prevent ecological risks in the mining industry and strengthening economy? Hence, this is the topic of this paper. Conclusion of the work presents the recommendations that have been given as a result of performed analysis. It is clear at the end that REACH could mitigate the ecological risks in mining and metallurgy, and improve competitiveness of the Serbian chemical industry on the EU market.

Keywords: *environments, risks, contamination, REACH regulation, chemical industry*

1 INTRODUCTION

The chemical industry is one of the world's most competitive and successful industries. Chemicals are widely acknowledged as important for the mining and metallurgy industries in the Republic of Serbia. In one of his work, Jenk and co-author stated that as a result of its extremely strategic nature connected to numerous sectors essential for modern-day society, and as a manufacturing industry which substantially transforms raw materials into products, the chemical industry is fully involved in the problems relating to industrial sustainability [1].

World chemicals sales in 2016 are valued at 3.360 billion of Euros, grew by 12.8 billion of Euros only compared with 2015. The European Union chemical industry ranks as the second (15.1%), along with the United States (14.2%) in the total

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sales. The EU countries and non-European countries total sales reached 597 billion of Euros in 2016 or 17.8% of the world chemical sales. Chemical companies in the EU in 2016 employed the total staff of about 1.14 million. The sector generated an even greater number of indirect jobs, up to three times higher than through direct employment. Direct employment average annual rate in the EU chemical industry decreased by 1.5% from 2000 to 2016. Hence, the EU chemical industry promised based on data that chemical sector grew 3.1% during the first half of 2017, compared to the same period of 2016. The challenge to provide an adequate safety in the EU chemical sector is always paramount. Created to ensure the safety of chemicals throughout EU, the EU chemical regulation REACH, is one of the most advanced pieces of chemical legislation in the world [2].

In the 20th century, the environmental protection starts to be one of the greatest concerns in the global world, and seriously affected chemical, and mining and metallurgical industries. In the ongoing efforts of the Republic of Serbia to join the EU, this issue is one among the most important. Regardless our country joins or not the EU, the mining companies should comply with the environmental standards and appropriate environmental legislation [3]. Therefore, the European and Serbian chemical and mining industry have contr-ibuted to the society capacity to reduce the green gases emissions (GHG), and imple-ment the accepted overall environmental friendly concept. In the Serbian towns, like Bor and Kosovska Mitrovica, they are recognized as the histo-rical pollution hot spots, and remediation measures are still missed [4].

Chemicals used in the mining and metallurgical process, as well in many other occasions caused the contamination of soil, water and air, and create a great problem for the competent authority and citizens. These problems have become the priority in the municipalities like Pancevo, Bor and Kosovska Mitrovica. There are number of reasons why contamination happens. The most common are the landfills from different kind of abandon and unmaintained industrial facilities, mine waste, which failed in the extreme weather conditions, illegal dumpsites (few of them recently fined in the towns of Obrenovac and Novi Sad), disposal of toxic wastewater in the rivers, underground spillage of oil, accidental spills, etc. Chemical contaminations happened during various natural and anthropogenic disasters, and cause the unprecedented consequences in few cases, like in the mine Stolice [5].

2 BRIEF HISTORY OF THE REACH REGULATION

To address the global sustainability goals, the modern society will require innovations enabled through sustainable industry, especially in the chemical sector. Through its processes and product, the chemical sector is a major driving force for innovation in Europe and essential for smart and sustainable growth across all sectors [6]. The REACH regulation undoubtedly has enormous contribution in achievement of sustainability goals. The REACH was proposed in 2003 after a long consultation period resulting from the publication of the White Paper on the Strategy for the Future Chemicals Policy in 2001 [7,8]. It is needed to state that the REACH was the reason to establish the European Chemicals Agency ECHA based in Helsinki with a task to implement REACH in practice.

Acceptation of the REACH regulations is a part of wider the nontoxic environmental strategy as a part of the 7th European Action Programme to 2020 [9]. The rapid adoption of the Regulation for the registration, evaluation, authorization and restriction of chemicals (REACH) was considered as a milestone in the Review of the EU Sustainable Development Strategy which requires that by 2020 the chemicals are produced and used in ways that do not threaten the human

health and environment [10]. The REACH furthermore give a greater responsibility to the chemical and mining industry to manage the risks from chemicals and to provide the safety information that will be passed down the supply chain. There are the realistic expectations that the REACH will contribute to the fulfillment of the World Summit of the Sustainable Development Goals 2030 [11].

Registration is one of the key elements of risk management in the REACH. It is staggered across three different deadlines – 2010, 2013, and 2018. At the beginning of its implementation in one report based on presented data on the deadline of 30 November 2010, the total of 4,300 substances were registered under the REACH chemicals regulation [12]. According to Article 117(4) of REACH the Commission has to report on functioning the REACH every five years starting from 1 June 2012. Therefore, there was a legal obligation for the Commission to create a report in 1 June 2017. This report has to be carried out by the Member States, the European Chemical Agency and the Commission. Due to collecting information from all interested parties, a public consultation was carried out from 28 October until January 2017. A specific consultation on SMS relevant issues was carried out through the Europe Enterprise Network (EEN). The expected report has to cover the five compulsory evaluation criteria: effectiveness efficiency, relevance coherence and added value, and put emphasizes on potentials for burden reduction and simplification [13]. Meanwhile, the report suffered three delays, and due to that it was in a big delay because of numerous reasons, and it is expected, based on the statement the ECHA's director of registration Christel Musset in REACH 2018 Stakeholders' Day in Helsinki "by the end of February or in March" of 2018 [14].

3 THE EUROPEAN EXPERIENCES IN THE PROCESS OF THE REACH IMPLEMENTATION

Discussion in the public and scientific communities all over the world showed without any doubt that the REACH regulation is of enormous importance for EU and whole global community. Industry despite all achievements still is worrying that the REACH is too bureaucratic, inflexible and costly, and could lead to a decline in competitiveness and job losses. At the beginning of the REACH implementation, due to similar doubt, a special assessment was created to present some data against the presumptive impact of regulation. Numerous participants address concerns about increasing the costs in this process. The European Commission Extended Impact Assessment calculated the cost of the REACH to the chemical industry for testing and registration costs of the REACH will be approximately 2.3 billion Euros over the period of 11 years (including Agency fees of 2.3 billion). The total costs are estimated to 3.5 billion of Euros[15]. This corresponds to around 50 cent per EU citizen per year – or less than the cost of a chocolate bar [16]. Various interesting studies could be find in the literature, which have estimated the costs from one side, and social, health and environmental benefits from the other side. One of the most detailed and worth to be considered regarding this issue is a book edited by Ackerman and Massey [17].

The uneven distribution of costs towards small and medium enterprises (SME) was another issue worrying industry. Concerns have been expressed about increases in the cost base of the companies, which may forces smaller firms out of market, or exhibit entry of the new ones and reduce the overall supplier base of the industry. Analysis of the REACH proposal shows that there are a number of “SME friendly” initiatives provided from the EU regarding this purpose, as well as many other benefits for SME [18].

The European Commission is permanently concerned about population perceived change in safety of chemicals and periodically organized specific survey regarding this matter. According to the special Eurobarometer survey regarding chemicals, 61% of Europeans thought that the chemicals were safer than 10 years ago [19]. In the last Eurobarometer report, the EU citizens express their opinion that they more likely to say that the safety of products containing chemical has improved, stayed about the same or deteriorated, compared with 10 to 15 years ago. More than two in five EU citizens (44%) think that the product safety has improved over this period, while one in six (16%) think it has deteriorated. One in three (32%) says that it has stayed about the same [20].

Although, the REACH has no precedent in the history of the chemical industry, and was the major step forward in the safe use of chemicals, a concern has been expressed by some chemical producers and companies that some industrial supply chains could be disrupted by the registration process, and the important industrial production could move outside of the EU due to the REACH registration requirements. Due to these reasons and many others caused by the global economic crises, and political situations regarding the Russian sanctions, and overall global security issues, the European Commission has taken a special care to provide as much assistance as possible to the businesses – and especially the SME – to ensure that they are able to meet their obligations. In 2010, for example, the European Commission has taken action to reduce fees for the SME. These reductions amount to 90% for micro-enterprises, 60% for small companies and 30% for medium-sized companies [21]. The European Chemicals Agency (ECHA) announced that by the first phase REACH registration deadline, applied to the most hazardous substances, manufactured or imported in quantities of one tone/year or more per company, and substances very toxic to the aquatic environment, manufactured or imported in quantities of 100 tons/year or more per company, 24,675 registration dossiers had been successfully submitted [22]. However, it is expected that the registration deadline of 31 May 2018 will be quite different from the two previous ones, in terms both the number of registrations and type of registrants [23]. This deadline concerns companies that manufacture or import the chemical substances in small volumes, between 1-100 tons per year. The ECHA expects to receive up to 60 000 registrations for up to 25 000 substances manufactured or imported in those volumes. The REACH 2018 will complete the gathering of data on chemical substances on the European market, resulting in the most comprehensive chemicals database in the world.

Industry remains concerned over data sharing the requirements that could result in a loss of confidentiality or competitiveness. It is obvious that data sharing are encouraged under the REACH, but it does not include any confidential data. Safety related data such as toxicity information will never be confidential because of the public right to be informed. However, the exact tonnages and formulae will remain fully confidential due to many security issues (ecological risks and terrorist possibility of abuse chemicals) [24].

The above mentioned are just a briefly author analyze of experiences, which were useful and should be followed in Serbia in the future process of the REACH application. Some examples of positive practice should be very useful for undeveloped and non-EU countries, like Serbia to apply the gained experiences in implementation the REACH regulation. One of that could be activity of the Directors' Contact Group (DCG). The DCG made an enormous contribution to the successful completion of registration. Their achievements, lessons learned and recommendations are valuable for all stakeholders [25]. It is concerned in

the last report the Directors' Contact Group (DCG) that the cost burden on SMEs for accessing data and jointly submitting their registration dossiers has created the risks to successful conduct the REACH 2018 registration [26].

4 THE CURRENT STATE OF THE SERBIAN CHEMICAL INDUSTRY

The actual state of the Serbian industry is far from the predicted in the past. In the project, led by the Government of Serbia and Prime Minister personally (2001-2003), the all competitive weaknesses and advantages of domestic chemical industry have been evaluated in the sub-project ``Chemical Industry,`` which was an integral part of the global project named: "The Strategy of Economy Development in Serbia up to 2010" [27]. The conducted analysis has proved that despite all, the chemical industry should be classified in the group of domestic industrial sectors having the best chances in realization the export oriented development strategy. Conclusion was that the Serbian chemical industry is probably a "small player" at the world or European scale, but should be considered as a "very important player" in the region of South-East Europe [28]. This statement is going to be proved in the next years.

The chemical industry in Serbia is the most development in Vojvodina where it create 35% of the GDP of total, after that in the region of Belgrade 25% and at the third place is the Šumadija region with 16%. The future of chemical industry has been given from the bright side. The positive prediction of the chemical industry is presented in the expected percentage of growth rate in GDP from 7.7 % in 2008 to 10% in 2020 [29].

Unfortunately, all that expectations about chemical industry like driving force of development fell down due to the negative impacts of privatization and many other unexpected obstacles. Process of privatezation jeopardizes safety of citizens which face with the long term consequences and fear, because competent authorities neglected or misunderstood its role in the emergency management in changed circumstances [30].

In few cases, an inadequate maintenance of chemical facilities and chemical in general caused serious accidents which jeopardize the environment and population health. Hence, the public awareness of risk perception about chemical industry signifycantly increased after serious of accidents (Viskoza fire, explosion in Galenika phytopharmacy factory, etc.). It could be stated that the loss of trust in some cases (the air pollution in city of Pancevo was one among many others) caused demonstration of citizens who addressed their basic human right on clean environmental guaranteed by the Constitution of the Republic of Serbia [31].

Chemical industry in Serbia is made up of 1,500 companies, which in 2014 contributed to the GDP by 2.2%, and employed over 32,000 people. Unlike the average of the Serbian economy, these companies, in addition to being more ready for the impact of the global financial crisis, proved to be more dynamic and healthier. Industrial production and exports continue their growth in the entire post-crisis period. The chemical industry, in addition to a solid foothold in Serbia, spills over its effects of development into the rest of the economy - the products are often used as a raw material source in the production process of a large number of related sectors. In this regard, the chemical industry is centrally positioned in the value chain of processing industry. The largest number of sectors of the chemical industry is identified in the segment of high development potentials. As much as 9 out of 13 sectors demonstrated a high development potential [32].

It is important to address that the chemical industry is recognized as the most important sector for increasing the regional employment, greater GDP, and increased

export in the South Banat region, Pirotski and Jablanicki region. The second importance this sector is recognized in the Macva region, Bor, Middle Banat, Sremski, Moravicki, Rasinski, and Sumadijski region [33].

The aim of the Serbian chemical industry is to retain or improve its place in the national economy and achieve a satisfactory return on capital. To this end, its objective is to supply its customers with the highest quality products, at the lowest competitive cost, in a healthy and environmentally sustainable fashion and on a long-term basis. Hence, the "recovery of the whole chemical industry", as well as of the industry in general, necessitates many favorable presumptions from the environment, as well as strategic, systematic and operative measures, of the state within social industry policy, as well as of the very companies which deal with chemical industry [34].

In 2017, the trends showed that the industrial production in Serbia increased by 6.9 percent compared to 2016. Manufacturing industry grew the most -- by 6.4 percent, while the energy sector fell by 6.2 percent. Manufacture of machinery and equipment, rubber and plastic products, chemicals and chemical products, and metal products had the largest influence on the industrial production growth [35].

Competitiveness and sustainable development of the chemical industry in Serbia is threatened by a combination of factors, higher energy prices; in a few cases the corruption is mentioned as well as the political influence, higher logistics costs and a business environment that generally does not invest enough in research of development activities. On the other hand, the industry itself has the power to increase its competitiveness by restructuring and improving its operational performance, by making use of improved market - sales excellence and more market and customer orientation, and by own invest in innovation and sustainable development. The public private partnership could be very useful, but till now the results were humble in this area. The chemical industry could be an important player on the South European market and EU if the Serbian government would be able to create the adequate transformation programs and increase the efforts to strengthen the chemical and mining industry.

5 ACCEPTANCE THE CHALLENGE AND ENGAGEMENT THE REACH REGULATION

All issues. considering the competetiveness of the Serbian chemical industry in adaptation of the REACH regulation, has to be taken with a multiplicity of audiences in mind. By adoption the Law on Chemicals [36], a foundation for preparation the implementation of Regulation (EC) No. 1907/2006 was created. The provisions of the REACH, related to the centralized procedures implemented in the ECHA, are not transposed, but approximated with the aim of better preparation the domestic industry for the REACH implementation. The competent Authority for chemicals management in the Republic of Serbia - The Chemicals Agency is established in 2009. National help desk is also established, and by informing, answering the questions, and preparation the guidelines for industry, guides industry to proper implementation of all obligations arising from the national regulations and REACH; building the capacities of the Chemicals Agency as well as education and informing of industry, in order to prepare them for fulfillment the future obligations pursuant to the REACH provisions, was in the progress after its establishment. Serbia plans to implement the Regulation by 2020 with the exception of certain provisions for which Serbia intends to request the transitional periods [37].

The positive achievement in the area of chemical management in Serbia was among other also a project financed by EU titled "Assistance in the Implementation of

Serbian Chemicals Management System," financed with amount about 10 million euro. In the period from 2008-2012, many useful actions happened, like realization of project about Integral system for monitoring transport of hazardous materials, education of employees in judicial system about environmental protection and criminal acts against environmental, etc.

Despite all, from this point of view it looks pretty unreasonable when after two and half year the Serbian Government decides to shut down the Serbian Chemical Agency with explanation about budget constraints. It can be seen as a giant leap back having in mind the current state of chemical waste on the illegal dumpsites found in the Serbian cities Novi Sad and Obrenovac. In the EU Report about the Serbian process to fulfill the conditions for membership in 2016, a certain concern is stated about Serbian ability to ensure the adequate administrate and surveillance capacities in order to implement the EU REACH regulative and the classification and packaging substances and mixtures in the fifth chapter. Therefore, in same document (page 34). there is a sentence that the competent authorities have to work on harmonization and adoption the secondary regulation and adequate implementing capacities area, and force an effective implementation of the REACH [38].

To meet the REACH challenges, the industry needs to take specific actions. Some actions are currently underway and need reinforcing; but some new initiatives are required. There is the basic need in the current macroeconomic state in the country to help in the process of the identification and detailing of the concern raised by the industry, and also tp take into account the ecological barriers of growth and development influencing the general quality of society life. The process of identification and developing solutions to a number of issues will help a smooth way to a successful completion of registration before the registration deadline. Maybe in the recent future, the policy makers should take into consideration development some of high impact national programs to assist the companies to prepare for registration, (which has evaluated like very successful in France and Belgium). These and other initiatives and approaches, e.g. pooling consultants for multiple companies, should be more presented in future. It is important to appoint that the future REACH implementation process in Serbia, like everywhere else, has to provide all kind of opportunities to create a dynamic environment for information exchange among the representatives of governmental institutions, non-governmental organizations, and industry, scientists and chemical experts.

Promotion the concept of corporate social responsibility (CSR) is of exceptional importance in the EU. [39]. Almost every multinational company and many smaller companies have adopted voluntary the CSR initiatives, which can include codes of conducting, auditing and monitoring strategies, social and eco labels, as well as the philanthropy [40]. The role of CSR has been found to be multifaceted, covering the areas such as transparency, environmental issues and corporate sustainability. In the current circumstances, a significant gap between policy makers and industry representatives exists in the Serbian society. Years after involvement the corporate social responsibility (CSR) concept in Serbia, there is still a lot of room for improvement. The Serbian environment is equally jeopardized as it used to be. The historical pollution remains an equally discussable question. Since the Serbian privatization process is evaluated as unsuccessful, now the society bears the scars of that wrong decision and in the area of solving historical pollution and remediation of contaminated sites, it is still far from an optimal solution. Therefore, the new concept of corporate sustainability and responsibility (CSR2.0 which covering not only the social responsibility, but also the organization

sustainability - therefore the abbreviation with 2.0 means those two S), expanded in the scientific public is even hard to implement in the Serbian practice. Policy makers and top business management are not still organized within the scope to be effective in this significant area. The Serbian business community is hard to admit that and despite all efforts there is a doubt that the CSR2.0 in Serbia will soon become much more highly engaged in the area of disaster management because the system of integral disaster often lacks a comprehensive knowledge about its role in disaster [41].

From that point and taking into account the current status of chemical industry, there is a fear that it would not be so easy to apply the REACH regulation. In addition, the Serbian chemical industry has been already challenged with the consequences of inadequately privatization process and future focused around an integrated approach to the pollution control (IPC), and need to provide an integral license (this deadline is extended by recently law changes). The Serbian Government and all stakeholders must consider some limitation factors, already notified in EU. It is very useful to have knowledge about the REACH implementtation in other countries. From that point data presented in the study prepared by the ECORYS of the Netherlands, which presents overview of 36 studies on the impact of the new EU chemicals policy (REACH) on society and business, could be extremely useful [42].

Another activity, which would be helpful to the policy makers to make the REACH implementation process more successful, could be establishing of some specific body like it was the Directors' Contact Group (DCG) in EU. At the end, it is needed that after all highlight enormous benefit for the environmental and human health of the REACH implementtation. It is expected that the REACH will help in avoidance severe health effects up to 50 billion Euros; impro-ved reuse of sewage sludge up to 2.6 million Euros and clean drinking water 34 million Euros. Having in mind a long path of Serbia to fulfill the environmental regulation, which is in power in EU, this regulation will obviously lead in the right direction [43].

CONCLUSION

Chemicals industry has been responsible for the diffusion of new technologies and positive spillover effects to a wide range of other industries. In this process it has fulfill different environmental standards. The REACH could lead to a brand stands for the highest ecological and social standards. But also, the fact is that the REACH will undoubtedly affect the competitiveness of the Serbian chemical industry creates the additional costs. The problem in future will arise from the fact that the importers, who did not apply the REACH, would be away from the European market. In Serbia, there is an additional need to adapt it and remove the general thoughts about chemical industry like unfavorable, help its renewal, arise the number of employee and thus drive the chemical industry forward. A stronger regulatory framework would protect the companies against the future liability claims and prosecutions due to a possibility of chemical accidents and environmental damage. The REACH will in future, without any doubt, brought multi benefits to the public and chemical industry. The public will have safer chemicals and have access to more sophisticated information on the products they consume. Due to a shortage of human and financial resources in Serbia, it should be pointed that everyone needs to work together-from enterprise level to the national and EU level. Although the REACH in Serbia is not so well recognized, and still looks like the new environmental legislation, its adaptation in greater scope would help chemical industry in shaping sustainable future accordingly to the experience of the European Union. The

main task for all stakeholders should be to careful access strength and weakness of implementation in terms of conditions and structure of the market, user choice, compliance costs, and administrative procedure. The results of the article confirmed that if the approach of chemical management is changed in practice, Serbia would avoid being the object of numerous scientific and institutional reports presenting Serbian insufficient capacity to cope with the ecological risk like chemical contamination in different perils and contribute to the sustainable development of country.

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