18th INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE S G E M 2 0 1 8

CONFERENCE PROCEEDINGS

VOLUME 18

ECOLOGY, ECONOMICS, EDUCATION AND LEGISLATION

ISSUE 5.4

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EDUCATION AND ACCREDITATION IN GEOSCIENCES

ENVIRONMENTAL LEGISLATION, MULTILATERAL RELATIONS AND FUNDING OPPORTUNITIES

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2 July - 8 July, 2018

Albena, Bulgaria

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Published by STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia, Bulgaria
Total print: 5000

ISBN 978-619-7408-49-2

ISSN 1314-2704

DOI: 10.5593/sgem2018/5.4

INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE SGEM
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TRAINING RUSSIAN PRACTITIONERS IN BEST AVAILABLE TECHNIQUES AND INTEGRATED ENVIRONMENTAL PERMITS

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ABSTRACT

The Federal Law on Best Available Techniques (BAT) becomes the main instrument regulating pollutant emissions from Russian industrial installations. The Law was adopted in July 2014, following an extensive review of the current environmental legislation.

The new Law aims to achieve a high level of environmental protection taken as a whole by reducing harmful industrial emissions through the application of BATs. Minimum 6,500 installations undertaking the industrial activities described as Category I (Integrated Pollution Prevention and Control) are required to operate in accordance with Integrated Environmental Permits (EIPs). Regional and local authorities as well as NGOs and general public will have access to IEP applications and be invited to discuss permit conditions set in accordance with the principles and provisions of the Federal Law and with requirements of the relevant sector BATs.

Both environmental managers of Category I installations and officers of environmental authorities in all Russian regions need to be trained in BATs and IEPs. To meet these needs, a module training programme was developed and tested. The programme is flexible and allows modifications: it can be used both for the intensive sector-oriented training and short-term introductory courses addressed to regional stakeholders.

In 2017-2018, the full-scale sector-oriented training courses (72 hours) were conducted both in mixed audiences and for the leading metallurgical, petrochemical and energy generating companies, including those who are obliged to obtain their IEPs as early as in 2019-2022; over 250 practitioners were trained. Shorter courses (8-24 hours) were conducted for more than 400 trainees. BAT-related workshops and role games as well as webinars attracted attention of nearly 2,000 participants.

The training programme is gradually developed in accordance with the principle of continual improvement. Collaborating with colleagues focusing their attention of other sectors and regions, we have to provide for better understanding and for the preparedness of Russian stakeholders to work under the conditions of the new BAT-based environmental regulation system.

Keywords: Best Available Technique (BAT), Emission Limit Values (ELV), Integrated Environmental Permit (IEP), Integrated Permitting Procedure, training programme.

INTRODUCTION

Environmental legislation reforms and introduction of the Integrated Pollution Prevention and Control (IPPC) have always formed needs in the additional adult training, including intensive training of industry practitioners, special education for IPPC authorities, awareness raising for decision-makers and politicians [1, 2]. Depending on the national experience in the field of higher and vocational training, the depth of the environmental legislation changes and the economic structure of the country, training needs and resources can vary a lot [3].

In the Russian Federation, there is a long and reach history of the environmental education, and – most importantly in terms of Best Available Techniques and Integrated Pollution Prevention and Control – education in the field called 'industrial ecology'. Though often considered as a concept first introduced in the United States of America and in Canada [4], industrial ecology has earlier been developed in the former Soviet Union, where first departments had been set in the technological higher school establishments as early as in 1970-1980 [5].

Industrial ecology aims to reduce environmental stress caused by industry whilst encouraging innovation, resource efficiency and sustained growth. Industrial ecology acknowledges that industry will continue operate and expand however, it supports industry that is environmentally conscious and has less impact. This concept has been widely spread in the Soviet (later on – in Russian) educational establishments, research institutions and appreciated by the leading industries, but not being reflected in the environmental legislation. Though since 1980s, there have been several attempts to introduce the Integrated Environmental Permitting [6], the system working now and being transformed by the Federal Law on Best Available Techniques [7], is based on the principle of single-medium permits and, surprisingly, end-of-pipe solutions.

Thus, to raise awareness of a wide range of stakeholders and to prepare industry practitioners and environmental officers to working under the conditions of the new BAT-based Integrated Environmental Permitting system, it is needed to develop and introduce training courses providing for the deep understanding of Best Available Techniques and the new legislation, but closely linked to and rooted in the national tradition of the education in the field of industrial ecology [8].

THE MODULE TRAINING PROGRAMME IN BEST AVAILABLE TECHNIQUES AND INTEGRATED ENVIRONMENTAL PERMITS

Identifying target groups and assessing training needs

In Russia, over 6,500 installations have been registered as Category I enterprises obliged to obtain Integrated Environmental Permits based on Best Available Techniques. These installations execute 39 types of activities, most of them being very similar to those listed in Annex I of the Directive 2010/75/EU on Industrial Emissions (Integrated Pollution Prevention and Control) [9]. Category I installations are located in nearly all 85 regions (federation subjects); the number of such installations varies from 1-2 to several hundreds of enterprises per region.

In 2019-2022, the environmental reform will address 300 installations emitting around 60 % of pollutants to air, water and land. They are often called 'pilot industries' because novel environmental permitting procedures and new technological parameters (emission levels associated with the Best Available Techniques, BAT-AELs) will be

first tested at these installations. Pilot industries representing 14 types of activities (of 39 listed in the Russian legislation) [10] are located in all 8 federal super-regions and in over 50 federation subjects within these super-regions (see Fig. 1).

Fig. 1. Spatial distribution of the pilot Category I installations in Russia

Nearly 2/3 of Category I pilot industries are situated in the three most industrialised super-regions of the Russian Federation, namely the Urals, the Siberian, the Volga, the and the Central ones. Sectors represented in these super-regions include first of all oil and gas exploration and refining, coal and ore mining, energy generation, ferrous and non-ferrous metallurgy, and municipal wastewater treatment. The latter sector is characteristic of Russian IPPC legislation: none of the EU grants BAT-based Integrated Environmental Permits to the municipal wastewater treatment plants.

This brief analysis lets us assume that first of all BAT-related training needs to be provided to the practitioners of 300 pilot Category I industries and to the environmental authorities responsible for granting IEPs to these industries. Since pilot industries have 4 years to obtain their IEPs for the first time (2019-2022), it would be logical to suggest starting with sectors and regions representing the majority of IPPC installations.

Sectors wise, this means beginning with the oil and gas exploration and refining (87 installations), municipal wastewater treatment plants (73 installations), large combustion plants (40 installations), coal and ore mining (33 installations). Regions wise, there is need to train environmental authorities and to raise awareness of wider stakeholders involved in discussing conditions of the IEPs.

In general, 2-3 operators (environmental managers and engineers) working at each Category I installation should be trained to enable them preparing decent permit applications. At the same time, it is necessary to provide training to 2-3 employees at each regional unit of the Federal Supervisory Natural Resources Management Service (or Rosprirodnadzor) acting under the authority of the Ministry of Natural Resources and Environment. Rosprirodnadzor will responsible for granting IEPs, while it is suggested that pilot industries will obtain their permits at the federal level, from the

Central Office of Rosprirodnadzor. It does not simplify the task, since local and regional stakeholders have to be made aware and prepared to participate in public discussions of permit conditions, while regional units of Rosprirodnadzor keep all the information needed to assess the previous law-obedience of the regulatees. Roughly, there is an urgent need to provide 600-1000 industry environmental managers and engineers and 100-200 environmental officers with training in the Best Available Techniques and Integrated Environmental Permits. Other stakeholders need rather awareness training and information support, but their number is rather high and can vary a lot from region to region, from sector to sector, from installation to installation.

Developing and testing the module training programme

The module training programme has been developed and gradually tested since 2015 using experience gained through the national and international BAT-related projects conducted in 2000-2012. At the beginning, it was suggested preparing shorter awareness raising courses providing general guidance on BATs and IEPs and describing approaches used in the EU and recommended by the Organisation for Economic Co-operation and Development [11]. Such courses have been delivered as workshops, role games and webinars; their components being gradually improved introducing information on the pilot projects, changes in the national environmental legislation, BREFs prepared in Russia, and BAT-AELs set by these BREFs.

For 2.5 years, these events (and especially the role games [12], [13]) attracted attention of over 2,000 wider stakeholders (target group 1) representing regional and local authorities, educational and research establishments, non-governmental organisations as well as industrial enterprises. Special workshops were conducted in Ekaterinburg, Tumen and V. Pyshma (the Urals), Krasnoyaksk, Sharypovo and Tomsk (the Siberian super-region), Kazan, Nizhny Novgorod and Ufa (the Volga super-region), Moscow, Ryazan and Tula (the Central super-region) as well as in a number of the North-West cities. These workshops and role games simulating the Integrated Environmental Permitting Procedure allowed identifying gaps and shaping longer training programmes for both Rosprirodnadzor and its regional units (federal environmental authorities, target group 2) and industry managers and engineers (target group 3). As the result, it was suggested developing a programme consisting of five main modules, which can be shaped and delivered for these three main target groups (see Fig. 2).

Key modules of the training programme include:

1. Understanding new environmental legislation, BAT and IEP principles and approaches
2. Exchange of information and experiences between Category I installations, research bodies and environmental authorities. Development and use of BREFs
3. Integrated Environmental Permitting procedure in Russia. Stakeholder involvement
4. The relevance of BREFs and sector-oriented BAT Technological Parameters in permitting
5. Actions and obligations according to the new legislation after granting of the permit (self-monitoring, recording and reporting of data, compliance control etc.).

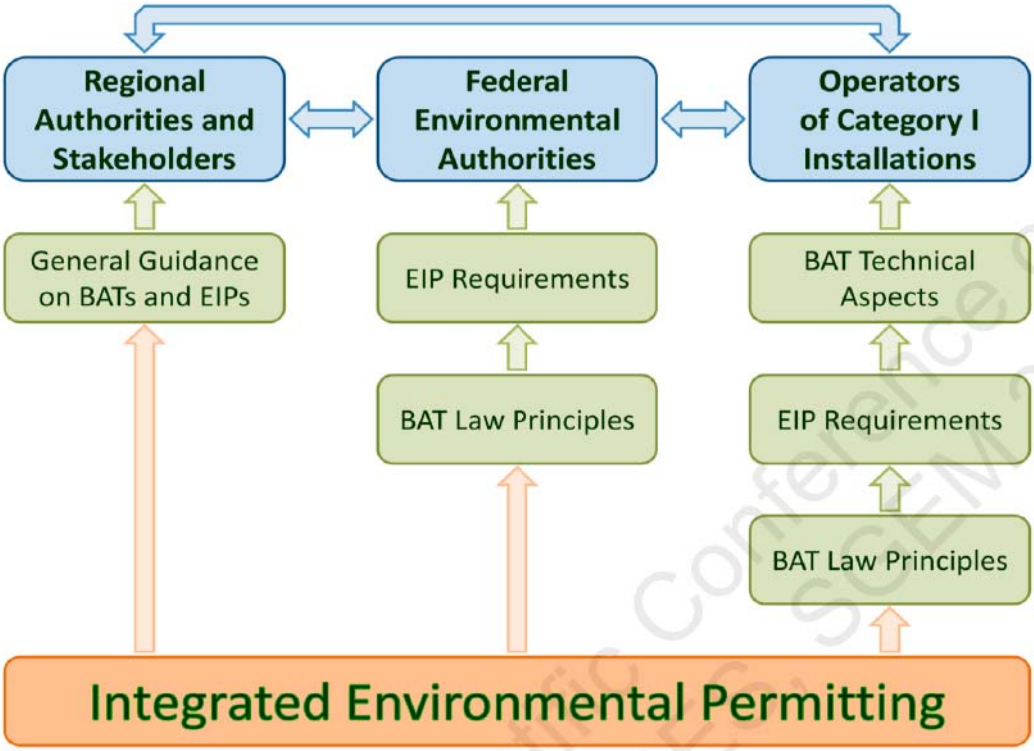

Fig. 2. Module approach to training Russian practitioners in Best Available Techniques and Integrated Environmental Permits

For decision-makers and wider stakeholders, modules 1 and 3 are concentrated in the shortest course – 'General Guidance on BATs and IEPs' (2-8 hours) – delivered before and in the process of the role games [12], [13]. Top managers of Category I enterprises should also be invited to the sort courses to be (1) made aware of the challenges and (2) to motivate the staff to deeper understand BAT/IEP requirements.

For Rosprirodnadzor the main emphasis is put on the challenges of the new Integrated Environmental Permitting procedure (modules 1, 3 and 5). The course is delivered either for the representatives of the federal authorities and their regional units or in mixed audiences (16-24 hours).

Both the role games and training courses for Rosprirodnadzor have become an instrument for the development of draft Integrated Environmental Permitting procedure; the relevant legislation is yet to be passed by the Russian Government, but key principles and main stages (linked to the recommendations of the Organisation for Economic Co-operation and Development [14]) of the procedure have already been widely discussed and are supported by wider stakeholders both at the federal and regional levels.

Finally, the most intensive training encompassing both legislative and technical (technological) aspects of BATs (72 hours, modules 1-5) is provided to the operators of Category I installations.

Training industry practitioners: challenges and opportunities

Here we have to return to Category I (IPPC) installations and pilot industries described in 'Identifying target groups and assessing training needs' section. Though the environmental reform and the turn to the Integrated Environmental Permitting based on

Best Available Techniques have been discussed in Russia since early 2000s, the national industry was not quite prepared to the challenges of the new legislation. The harmonisation of the national environmental and industries policies is a time- and effort-demanding process, in which we can see both leading and rear-guarding companies and even sectors [15].

The leaders include industries working internationally, operating installations in Russia and abroad, selling their products on various markets. This group encompasses both larger (and often) multinational metallurgical, hydrocarbon exploration, energy generation, production of pulp & paper, construction materials, etc. companies. Many installations are operated by the international managers, registered against the requirements of ISO standards on quality, environmental and energy management standards. Pulp & paper, copper and aluminium, chemical and cement companies participated in the national and international BAT-related projects in 2002-2010 [8]; their managers and engineers were not only made aware but trained (in many cases – by the international experts, in Russia as well as abroad). These companies actively participate in shaping the national BAT/IED legislation and in the development of BREFs, benchmarking procedures needed to set emission levels associated BATs, etc. Still, the level of awareness and practical experience varies from one site to another quite dramatically. It is necessary to mention, that operating very large and complicated installations, many leaders are included in the list of 300 polluters (pilot industries).

The core of the Russian industry is neutral: some operators believe that for 7 years left for obtaining IEPs they will have many opportunities to learn from the beginners (first of all – pilot industries) and prefer waiting for the legislation and permitting procedures being 'settled' (not only introduced but tested, improved and finalised). Not willing to be biased, we could only assume that this is the case for many hundreds of operators, and it would be strange criticising them for not turning to the pro-active position and rushing to train their personnel in BATs and to get Integrated Environmental Permits at the early stage. Still, when there are opportunities to train staff via, for instance, international projects (as those supported by the European partners) they explore them with pleasure.

Finally, the rear-guarding or opposing companies are those trying hard to be excluded in Category I and allowed to obtain single-medium permits (as they have been doing since the late 80s). They belong to various sectors, sometimes co-operate with each other within frameworks of associations, supported by environmental lawyers, etc. Ceramic industries form one of the most known examples: they had left the leading group (in which they actively worked in 2007-2014 [13]) and seek support of the national environmental lawyers to (1) withdraw the individual enterprises from Category I and (2) to alter the national IPPC list [10] either excluding ceramic production at all or setting unreasonably exaggerated thresholds.

Effectiveness and time wise, it is reasonable to focus attempts to run training programmes on the first (leading) group and namely – on the staff of the pilot industries forming the bulk of the 'key polluters' community. In some cases, such trainings can be conducted for mixed audiences but the recent experience of the BAT Bureau (2017-2018) suggests that running 72-hour courses for sector-oriented groups brings better results.

Up to now, 72-hour training courses have been conducted in mixed audiences with the support of the Russian-German project 'Climate Neutral Economic Activities:

Introducing Best Available Techniques in the Russian Federation', in the groups of the practitioners from construction materials and of the chemical industries, as well as vocational training tailor made for the producers of aluminium and for hydrocarbon exploration enterprises and oil and gas refineries and large combustion plants.

Each programme was based on the module principle described above and run by the BAT 'generalists', most experienced in the BAT/IED legislation, drawing up and reviewing of the national BAT standards and BREFs, acting as teachers at technical higher school establishments and researchers. They were involved in delivering all 5 modules while sector specific BATs, BAT-AELs, and self-monitoring aspects were presented by the developers of the relevant BREFs and most experienced environmental managers and engineers working for the leading companies. Over 200 industry practitioners have already been trained, and new courses are planned for energy generating, pulp & paper and, most importantly – for municipal wastewater treatment companies. It is expected that some of these courses could be conducted with the support of the Swedish Environmental Protection Agency. Due to the priorities of the Russian-Swedish collaboration, it is likely that these training courses will be run in the North-West and in particular – for the industrial sites being categorised as hot spots of the Barents region (sites that have been polluted and pose a health risk to those who live near them, either because of the direct impact or potential to poison the drinking water or other food chain, http://www.barentscooperation.org/newsletter/Newsletter-1-2011/Barents-environmental-hot-spots). Development of the training programmes in is progress, and the new challenges motivate the Russian BAT Bureau to widen the circle of teachers and researchers delivering training and to form the society of BAT experts involved both in the further drawing up and review of BREFs, assessment of IEPs and in BAT-related training in the Russian Federation.

CONCLUSION

The ongoing reform the Russian environmental legislation sets challenges to the industry practitioners obliged to obtain Integrated Environmental Permits based on Best Available Techniques. Category I (Integrated Pollution Prevention and Control) industries amount over 6,500 installations; 'key polluters' (300 pilot industries) must get their permits in 2019-2022. Lessons learnt by other countries turned to the EIPs in 2000-2014, prove that training and awareness raising needs cannot be underestimated. The rapid pace of the reform in Russia makes it very important to develop a variety of programmes and information materials applicable both for sector-oriented training courses and awareness raising events.

The module programme guiding trainees from the general understanding to the level necessary to apply BAT principles in practice and to obtain IEPs has been prepared and tested in many regions. In 2017-2018, the full-scale sector-oriented training courses (72 hours) were conducted both in mixed audiences and for the leading companies of several IPPC sectors, including those who are obliged to obtain their IEPs as early as in 2019-2022. Over 250 trainees keep contacts with the BAT Bureau and participate in BAT-related events. Thus, the module programme laid the necessary basis for the further developments aimed at meeting the challenge to train Russian practitioners in the field of Best Available Techniques and Integrated Environmental Permits.

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