BEAC WGE, Subgroup on Hot Spots Exclusion (SHE)

Report on the Sector Practical Workshop and Special Consultations "Preparing practitioners of Municipal Wastewater Treatment Plants and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops / consultations using experience of the Nordic countries in the field of BAT and technical innovations" conducted in Petrozavodsk and Naryan-Mar (Supporting Activity (SA) No 2 b)

under

SA No2 "Preparing industry practitioners and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops using experience of the Nordic countries in the field of BAT and technical innovations"

November 2019

Moscow – Petrozavodsk – Naryan-Mar

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Introduction

In 1994, the Barents Region Environment Action Programme was adopted by the Ministers of the Environment of the countries involved. In 2003, a report was released identifying 42 acute environmental problems in the Barents Region requiring urgent action (environmental Hot Spots of the Barents region).

In 2005, the Ministers of Environment of the four Barents countries – Finland, Norway, Russia and Sweden – defined the goal to start launching investment projects in all of the Barents environmental Hot Spots by 2013 with the aim of eliminating these Hot Spots. In 2010, a procedure for exclusion of the 42 environmental hot spots from the Barents environmental Hot Spot list was presented to the Ministers of Environment.

At the same time, since early 2000s, the concept of Best Available Techniques (BATs) has been studied, tested and gradually introduced in the Russian Federation. In 2014, the Federal Law of July 21, 2014 No 219-FZ amending the Federal Law No 7-FZ "On Environmental Protection" was passed. This new Law is often called "The BAT Law" of the Russian Federation since it introduced the concept of Best Available Techniques and Integrated Environmental Permits (IEPs). This opened opportunity for applying BAT principles for excluding installations from the List of Hot Spot based on the implementation of BATs and development of Environmental Performance Enhancement Programmes (EPEPs).

By the end of February 2019, the majority of subordinate acts has been passed, but the most important statutory document – the procedure of granting IEPs – has been issued in so called "preliminary" form. It does not reflect the national and international recommendations, results of open discussions, role games, etc. The reason for issuing this "preliminary" form by the Government Decree of February 13, 2019 No 143 is that the fundamental alterations to the Federal Law No 7-FZ "On Environmental Protection" (addressing the IEP granting procedure) has not been made before the end of 2018. Still, first "pilot" installations are running Environmental Impact Assessment Procedures and preparing for submitting Environmental Impact Assessment Reports and IEP applications (including EPEPs) to the federal Rosprirodnadzor for the State Environmental Expertise (Quality Assessment/Review). First IEPs have to be granted in Russia in 2019, and to prepare applications for such permits the Barents region stakeholders need urgent support. So far, one Barents region installation (Haryaga Petroleum Exploration Site) is planning to apply by the end of 2019.

The Government Decree setting requirements to considering and approving EPEPs passed back in 2015 (Government Decree of September 21, 2015 No 999 "On the Inter-Departmental Commission Considering Environmental Performance Enhancement Programmes") was reviewed and amended to provide for the clear and participatory procedure harmonised with the BAT legislation (Government Decree of September 18, 2019 No 1028). Thus, there are all necessary conditions for the consideration and approval of EPEPs submitted by IPPC installations. Officially approved EPEPs can serve as criteria for the exclusion of IPPC installations (category I installations) from the list of "Hot Spots". Along with other criteria (valid permits, trained staff, available information on key environmental aspects, etc.), EPEPs will form the necessary basis (information) for decision-makers.

Petrozavodsk Sector Practical Workshop "Preparing practitioners of Municipal Wastewater Treatment Plants and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops using experience of the Nordic countries in the field of BAT and technical innovations" has become the second SA 2 training event, addressed first of all to the practitioners of Municipal Wastewater Treatment Plants operating "Hot Spot" installations and focused on opportunities for using BAT-related instruments (EPEPs) for the exclusion procedure.

Naryan-Mar consultations for smaller municipal wastewater facilities formed a part of SA 2b and included both consultations themselves and presentations and discussions of current and expected BAT-related legislation, requirements, and procedures.

The workshop in Petrozavodsk (SA 2b) and the special consultations in Naryan-Mar (SA 2b) have been funded by the Barents Hot Spots Facility (BHSF) at NEFCO (the Nordic Environment Finance Corporation). NEFCO funded also the preceding six workshops as integral parts of Barents Supporting Activity SA 1 ("Preparing regional experts to apply the principles of BAT and the practical use of the Russian BREF documents for various branches") and SA 2a Sector Practical Workshop for Pulp and Paper industries.

Report on the Sector Practical Workshop "Preparing practitioners of Municipal Wastewater Treatment Plants and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops using experience of the Nordic countries in the field of BAT and technical innovations" in Petrozavodsk (Supporting Activity (SA) No 2b)

Aims

1) preparing practitioners of Municipal Wastewater Treatment Plants to identify key issues to be solved while applying for Integrated Environmental Permits (required in accordance with the Federal Law FZ-219, Russian BAT/IED legislation);
2) assessing key environmental performance parameters of Municipal Wastewater Treatment pilot / partner Category I industries and helping industry practitioners to run gap analysis needed to draft Environmental Performance Enhancement Programmes (requirements to which are set by the Federal Law FZ-219 and by the Government Decree No 999);
3) forming a stronger link between BAT-based environmental regulation instruments and Barents Hot Spots exclusion procedure's and opportunities.

It also aims to provide an insight in how the BAT-thinking can be used on the Barents Hot Spots in order to promote appropriate requirements and actions for the exclusion.

Training on-site is considered to be a very effective instrument for the involvement of industry practitioners into the work on the development of rationales (applications) for the Integrated Environmental Permits, draft Environmental Performance Enhancement Programmes including those addressing Hot Spot exclusion issues.

Place. Time. Experts. Participants

Petrozavodsk 2b Workshop was conducted during the period of October 09-10, 2019 at the premises of Petrozavodsk Municipal Wastewater Treatment Plant and Piter Inn Hotel.

The workshop was held jointly by Russian and Nordic experts. The Federal State Autonomous Body Research Institute 'Environmental Industrial Policy Centre' (EIPC, Russian BAT Bureau) developed the training programme being supported by the representatives of SHE, the Swedish Environmental Protection Agency, Finnish Environment Institute (SYKE), Russian authorities (the Ministry of Natural Resources and Environment of the Russian Federation (Minprirody), the Federal Federal Supervisory Natural Resources Management Service (Rosprirodnadzor) and the Ministry of Industry and Trade of the Russian Federation (Minpromtorg)) and the Environmental Auditing and Management Centre (the EIPC partner in the field of training).

Very important roles in organising Petrozavodsk 2b-2 Workshop were played by the Ministry for Natural Resources and Environment of the Republic of Karelia (and personally by Larisa Kolokolnikova) and by SKBIC, the Swedish-Karelian Business and Information Centre (and personally by Vera Meshko).

Still, all invitation, negotiation, explanation etc. activities were implemented by EIPC.

The following Nordic and Russian experts took part in the programme development and implementation of the workshop:

<u>Nordic experts</u>

- Ulf Bjallas, Fröberg & Lundholm Advokatbyrå

- Rickard Natjehall, Swedish Environmental Protection Agency
- Jyrki Laitinen, Finnish Environmental Institute (SYKE), SHE Group Expert
- Kristina Svinhufvud, Swedish SHE Task Force Expert (Waste Water), Swedish Environmental Protection Agency

Kari Pirkanniemi (Environmental Counsellor, Regional Administration of Southern Finland) took part in the workshop and contributed towards expert discussions.

Russian experts

- Dmitry Danilovich, Head of the Centre for Technical Policy and Modernisation, "Municipal Services and Urban Environment Association", Head of the Technical Group 10 (leading development of Russian MWWT BREF)
- Andrey Epov, Chief technical specialist, TWW Treatment Water, member of the Technical Group 10 (leading development of Russian MWWT BREF)
- Tatiana Guseva, Deputy Director, EIPC; member of TC 113 on BAT
- Kirill Shchelchkov, Deputy Head of the Department for Standardization, Methodology and BAT Assessment, EIPC
- Irina Tikhonova, Associate Professor at the Department for Industrial Ecology, Dmitry Mendeleev University of Chemical Technology, Member of several technical Working Groups, experts of the Federal Project “Best Available Techniques”.

Alexander Indyk, Deputy Head of Department for Land Supervision, Rosprirodnadzor (Moscow) took part in the workshop and contributed towards expert discussions.

Victoria Venchikova, up to the end of August 2019 — the Deputy Director of the Department for Environmental Protection State Policy and Regulation, the Ministry of Natural Resources and Environment of the Russian Federation, prepared and recorded a special presentation which was shown to the participants and commented by Russian experts.

The leading technologists of Saint-Petersburg Vodocanal contributed towards the site assessment and workshop discussions and invited the project team to run SA 5 (workshop on EPEP development and approval results) at Saint-Petersburg Vodocanal premises.

The Russian team of experts was formed by EIPC in accordance with the priorities of Petrozavodsk 2b Workshop (set in the Terms of Reference) and reflecting interests of the Republic of Karelia stakeholders.

In September-October 2019, the Ministry for Natural Resources and Environment of the Republic of Karelia and the Swedish-Karelian Business and Information Centre helped to prepare a draft list of participants. EIPC invited representatives of the regional industries, environmental authorities, and higher school establishments to the workshop. EIPC prepared and disseminated all original invitation letters and identified additional participants from higher school establishments and consulting companies.

Maximum number of participants amounted 44 people (please see Fig 1, 2 and the list of workshop trainers, trainees and guests in Attachment 1).

During several sessions, workshop participants worked as a single group, but most of sessions were arranged as parallel events addressing specific training needs of (1) MWWTP technologists,

environmental engineers and experts and (2) environmental authorities (of the federal and regional levels), consulting companies, and university teachers.

The initial idea to keep two separate sub-groups allowing them to come together while discussing BAT/IEP/EPE legislation, was put forward by the Nordic and Russian experts concerned about deep training of sector industry managers and engineers in the field of EPEP development and implementation.

- Environmental managers of industrial sites / Regional Environmental Hot Spots:
  - **13 representatives** (Wastewater Treatment (Vodocanals) and Pulp and Paper Plants)
- Authorities (The Ministry for Natural Resources and Environment of the Republic of Karelia, Federal Rosprirodnadzor and Karelian Unit of Rosprirodnadzor, State Expert Organisations, Environmental authorities of Nordic countries):
  - **21 representatives**
- Academia: R&D organisations, higher school establishments, etc.:
  - **7 representatives**
- Consulting Companies:
  - **3 representatives**

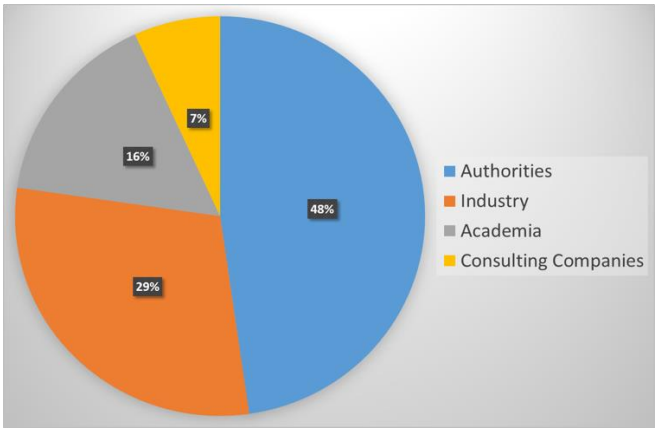


Fig. 1 — Petrozavodsk workshop target groups

Fig 2 – Participants of Petrozavodsk 2b Workshop

Specialists of both Federal Rosprirodnadzor and Karelian Regional Unit of Rosprirodnadzor, as well as Saint-Petersburg and regional Category I installations (especially MWWT plants) participated actively in the workshop discussions, raised many serious questions and discussed gaps in the RF environmental

legislation, in particular, in acts setting requirements to IEP granting procedure. It was pointed out that the fact that Government decrees establishing BAT-AELs for MWWTP have not been passed (yet) prevents Vodocanals from finalising IEP applications.

Topics. Training programme

Petrozavodsk 2b Workshop training programme was tailored to meet requirements of MWWT sector managers and engineers as well as other important stakeholders. It was built upon the results of SA 1b trainings and focused on EPEP issues, since Environmental Performance Enhancement Programmes can play the role of evidences of (1) environmental improvements (first of all – by "Hot Spot" Installations); and (2) BAT implementation.

Along with other criteria (staff trained, valid environmental permits held, information on key environmental aspects available (online reports, reviews, etc.) EPEPs can be considered for the exclusion of "Hot Spots. For MWWT sector, specific criteria have to be based on the Governmental Decree to be adopted by Russian Government by end of 2019.

Therefore, topics of the SA No 2b covered the following events and themes (please see the training programme in Attachment 2):

- AO "PKS-Vodocanal" (Petrozavodsk WWTP) site visit, discussion of evidences of environmental improvements and BAT implementation
- Key information on BAT (Russian BREF/ITS 10-2015), Environmental Performance Enhancement Programmes (EPEPs) and Russian BAT/IED legislation (changes to the legislation are still expected)
- Presentation and discussion of Gap Analysis principles (focused on sector findings)
- BAT/BREF/EPEP connection to the Barents Environmental "Hot Spots"
- Information on the Federal Project (BAT Implementation) and opportunities for using EPEP assessment/approval instruments for the "Hot Spot" exclusion procedure

Nordic experts participated actively in most discussions providing very valuable "reflections", comments and explanations. Presentations were made by Rickard Natjehall, Jyrki Laitinen, and Kristina Svinhufvud.

The official opening of Petrozavodsk 2b Workshop took place at AO "PKS-Vodocanal" (Petrozavodsk WWTP) site (Fig. 3).

BAT/BREF/EPEP/IEP/FZ-7 presentations were prepared on the basis of EIPC/BAT Bureau materials considering alterations in the legislation, timing and composition of the participants' groups.

Key workshop presentations consisted of two parts: one delivered by Russian experts and another one made by Nordic experts (tailored as either an additional presentation or a comment/reflection of the main material). This helped to explain many difficult points dealing with IEP granting procedures, establishment of BAT-AELs, compliance, reporting, inspections, etc. (Fig. 4).

The workshop was planned and conducted to meet training needs of both (1) environmental engineers and technologists and (2) representatives of environmental authorities, expert community, academia and consulting companies. Parallel sessions appeared to be very useful for intensive discussions and deep consideration of relevant materials. At the beginning of the workshop and during final discussions and SA 3 presentation, all attendees were gathered together.

All “Hot Spots” related presentations were prepared in accordance with SHE recommendations. Rickard Natjehall described both the concept and the exclusion procedure and progress in detail.

Workshop opening
(Vitaly Ostapchuk and Dmitry Danilovich)

On-site discussion

Wastewater treatment facilities

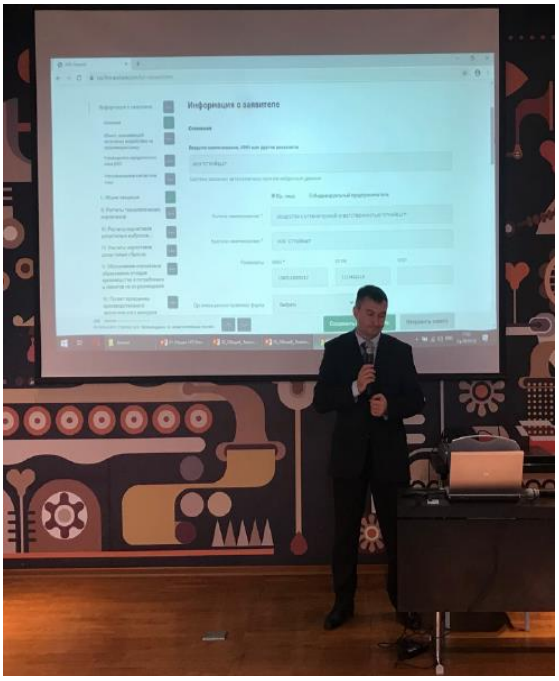
Sludge composting site

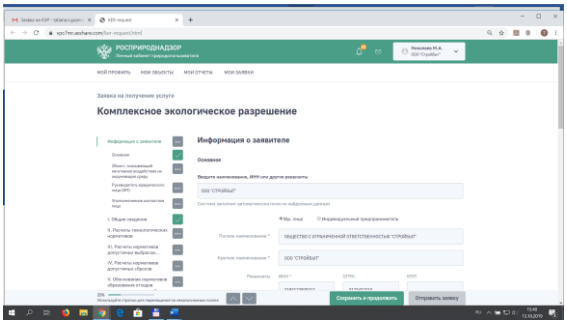
Fig. 3 – AO “PKS-Vodocanal” (Petrozavodsk WWTP) site visit scenes

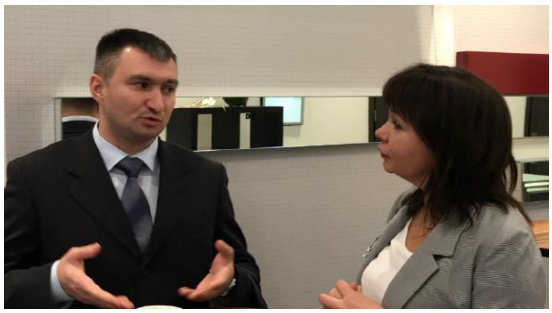
It is necessary to emphasise that most recent information on BAT-related permitting procedures was presented by Dmitry Danilovich, Head of TWG 10 (which developed Russian MWWT BREF back in 2015 and is reviewing it in 2019), Head of the Centre for Technical Policy and Modernisation of ZKH “Razvitie” Association (Housing and Utilities Sector) and the Chief Editor of the Sector Journal (BAT in MWWT).

Another important feature of the workshop was the participation of Alexander Indyk, Deputy Head of Department for Land Supervision (Federal Rosprirodnadzor, Moscow) who presented the software for developing IEP applications online and provided professional advice to his colleagues from the Karelian Unit of Rosprirodnadzor (Fig.4).

Workshop supporting materials (e-learning) including legislative acts, Russian BREFs and BAT-related standards related to Municipal Wastewater Treatment were placed online on www.burondt.ru website. Additional information was provided on request to Vodocanal managers and engineers as well as to Karelian Rosprirodnadzor officers.







Presenting and discussing test IEP Application Software

Fig. 4 – Workshop scenes

Discussions and consultations in Petrozavodsk

The following special consultations took place during Petrozavodsk workshop:

- **IEP-related Procedures and IEP Inspections**: Alexander Indyk provided advice both to Category I industries (in particular, “Kondopoga” P&P Plant) and Karelian Unit of Rosprirodnadzor.
- **EPEP-related Procedures**: Andrey Epov, Tatiana Guseva and Irina Tikhonova provided advice to Vitaly Ostapchuk and Ilya Chizhikov (AO “PKS-Vodocanal” (Petrozavodsk WWTP)) covering both EPEP preparation and its consideration by the Inter-Departmental Commission. It was agreed to begin describing Vodocanal Action Plan (retrospective EPEP) as soon as possible working together online and paying visits when necessary.
- **Collaboration with Nordic experts**: Rickard Natjehall, Jyrki Laitinen, and Kristina Svinhufvud agreed that Nordic experts would take the responsibility for preparing the “rationale” for including AO “PKS-Vodocanal” (Petrozavodsk WWTP) into the list of “Hot Spots”, describing expectations of SHE group and the overall exclusion procedure. Russian experts will focus on technical aspects developing step by step the actual EPEP in accordance with the RF legislation.
- **Special international negotiations** were conducted to make sure that the Ministry for Natural Resources and Environment of the Republic of Karelia (Larisa Kolokol’nikova and her colleagues) are prepared to further collaborate with SHE and participate in EPEP discussion and approval procedure.

Special Consultations for the Nenets Okrug Wastewater Treatment Practitioners and Authorities (conducted within the framework of the implementation of the Supporting Activity (SA) No 2b)

Special consultations for the Nenets Okrug practitioners were planned as an integral part of SA 2b.

They took place in Naryan-Mar on November 25-26, 2019 and attracted attention of wastewater treatment facilities, municipal and regional authorities. Maximum number of people in the room amounted 25 (please see the list in Attachment 1).

- Environmental managers of industrial sites / Regional Environmental Hot Spots:
  - **14 representatives** (Wastewater Treatment Plants (Vodocanals), Food Production Sites and Oil and Gas Extraction Facilities)
- Authorities (The Department for Natural Resources Environment and Agroindustrial Complex, Local Administration):
  - **6 representatives**
- Academia and consulting companies: R&D organisations, higher school establishments, etc.:
  - **5 representatives**

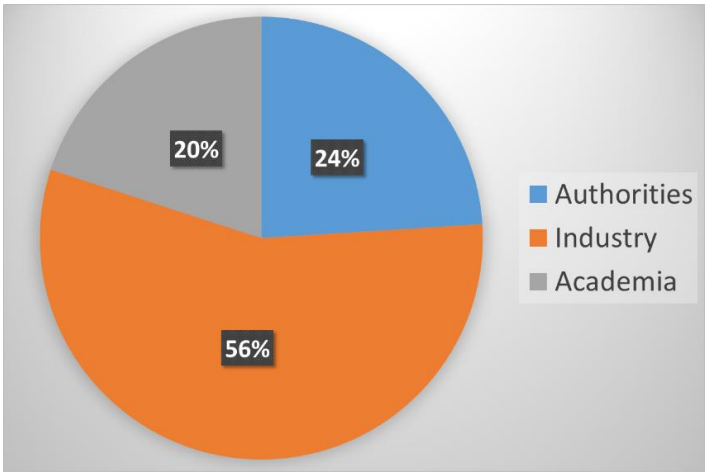


Fig. 5 — Naryan-Mar consultations workshop target groups

The following experts participated in the consultations:

- Henrik Forsstrom, NEFCO, Senior Adviser
- Matti Iikkanen, NEFCO, Wastewater Treatment expert
- Andrey Epov, Chief technical specialist, TWW Treatment Water, member of the Technical Group 10 (leading development of Russian MWWT BREF)
- Tatiana Guseva, Deputy Director, EIPC; member of TC 113 on BAT

Issues addressed during Nordic-Russian consultations dealt with new BAT-based requirements to Russian WWTP. Andrey Epov explained BAT-AELs in detail; annotations of BAT-AELs recommended in ITS 10-2015 (Russian WWT BREF) were provided in Russian and English.

Characteristics of WWTP reconstruction projects were considered; it was agreed that Matti Iikkanen and Russian BAT Bureau (and in particular Andrey Epov) would collaborate preparing feasibility studies for projects supported by NEFCO.

On November 26, 2019, tailor-made presentations covered:

- Status of sewerage systems in small and medium-sized towns
- Design and Construction of MWWTP
- Operation and maintenance of MWWTP: Steps for Best Practices (see Attachment 3 for more information)
- Opportunities for the (environmental) performance enhancement
- Principles of setting requirements to MWWTP design and selecting project design companies
- Information of the project design companies
- The National Project “Environment” (“Ecology”) and the Federal Project “Best Available techniques”
- Integrated Environmental Permits: the new permit granting procedure in Russia

- Requirements to Environmental Performance Enhancement Programmes

Besides initially planned special topics (related to Municipal Wastewater Treatment Practices), issues dealing with the new BAT-based legislation and first results of granting IEPs were presented.

Henrik Forsstrom opening the consultations

Andrey Epov presenting project design principles for smaller WWTP

Fig.6 – Special consultations in Naryan-Mar

Certificates and exit questionnaire

In Petrozavodsk, 16-hour training certificates were granted to the active participants (27 people) on October 10, 2019. Representatives of Karelian Unit of Rosprirodnadzor expressed their interest to prepare “home works” and to participate in the future events. In principle, as soon as all requirements of the professional qualification courses are met, successful trainees can be granted official 72-hour documents.

Online final questionnaire was offered to the participants. They were asked to assess workshop events and materials using the scale from 1 (very poor) to 5 (excellent). By the end of the workshop, 15 questionnaires had been filled online. Workshop participants assessed the workshop the following way:

- Timeliness of the workshop and information presented: 4.93
- Coverage of BAT and environmental “Hot Spots” related information: 5.00
- Coverage of practical MWWT related issues 5.00
- Coverage of the international experience: 4.87
- Quality of presentations and handouts: 4.87
- Usefulness for the future practical application: 4.93

Many participants emphasised the high level of presentations made by all experts. In general, sector-related practical information, information presented by the Federal Rosprirodnadzor (IEP granting procedure and online IEP application software) appeared to be most useful.

In Naryan-Mar, participants expressed their satisfaction and gratitude and asked for additional information; no questionnaire was used.

Publications

News on Petrozavodsk 2b Workshop were posted by (please see Attachment 4):

- **Environmental Industrial Policy Centre:** https://eipc.center/news/nailuchshie-dostupnye-texnologii-i-kompleksnye-ekologicheskie-razresheniya-opyt-stran-severnoj-evropy-i-perspektivy-v-rossii-2/
- **Ecoline:** http://ecoline.ru/workshop-barents-environmental-hot-spots-in-petrozavodsk/
- **Russian BAT Bureau:** http://burondt.ru/informacziya/novosti/nailuchshie-dostupnye-texnologii-i-kompleksnye.html

Information is also provided to PR-office of AO "PKS-Vodocanal" (Petrozavodsk WWTP).

In addition, EIPC expects that a special article written by Dmitry Danilovich and devoted to SA 2b workshop will be published in "BAT in Municipal Wastewater Treatment" Journal by the end of 2019

News on Naryan-Mar event were posted by:

- Naryan-Mar City Council: http://gorsovetnm.ru/news/detail.php?ID=3874
- Environmental Industrial Policy Centre: https://eipc.center/news/konsultacii-predstavitelej-malyx-stancij-ochistki-kommunalnyx-stochnyx-vod/
- Russian BAT Bureau: http://burondt.ru/informacziya/novosti/konsultaczii-predstavitelej-malyix-stanczij-ochistki-kommunalnyix-stochnyix-vod.html

Information is also provided to Naryan-Mar authorities for further dissemination.

Outcomes

Planned	Achieved
Site visit paid and preliminary assessments (including BAT compliance / incompliance evidences) have been made	BAT experts paid a site visit to AO “PKS-Vodocanal” (Petrozavodsk WWTP). BAT compliance issues were discussed and treated water quality parameters compared to BAT-AEL requirements. Special attention was paid to sludge composting procedures.
Sector-related workshop conducted	Petrozavodsk 2b workshop conducted in the period of October 09-10, 2019. Pre-workshop consultations were conducted on October 08, 2019. – 44 people participated in the workshop (including 12 environmental engineers and technologists of MWWT Plants)
Special consultations for MWWT practitioners are conducted	Naryan-Mar 2b consultations conducted in the period of November 25-26, 2019. – 25 people participated in consultations (including 7 representatives of MWWT Plants and other municipal services)
Hand-outs prepared and disseminated among the participants.	Hand-outs prepared and disseminated included Workshop supporting materials (e-learning), legislative acts, Russian BREFs and BAT-related standards were placed online on www.burondt.ru website. Link: https://mega.nz/#F!1AhmUIwL Password: !H7_hnTHGuGhFU8oGUDcl5w USBs and disks were offered to all participants; additional copies were provided on request.

Planned	Achieved
Participants fully understand key positions of BAT, BREFs, Environmental Performance Enhancement Programmes (EPEPs) and the Federal Laws FZ-219/FZ-7, Russian BAT/IED legislation (including changes made in 2018-2019).	Trainees actively participated in the workshop and received the necessary information. BAT-related examples were provided for Municipal Wastewater Treatment as well as for Pulp and Paper. Special attention was paid to EPEP development, assessment and approval requirements. In Naryan-Mar, participants representing oil and gas companies, food industries, waste management facilities, etc. were provide with all materials requested. Additional information is available online.
Participants understand principles of the comparative analysis of environmental performance data and applicable BAT-AELs needed to draft rationales for EPEPs and IEP applications. Participants understand Gap analysis principles (relevant to the Pulp and Paper sector).	Comparative analysis of technological parameters achieved by AO "PKS-Vodocanal" (Petrozavodsk WWTP) and sector-related BAT-AELs was made and results discussed. Gap analysis principles were presented, discussed in detail and recommended to be used by industry practitioners.
Participants deeper understand how to use BAT/BREF/EPEP instruments for the exclusion of the List of Hot Spots. Capacity of the Russian BAT experts is improved (MWWT as well as general BAT/IEP/EPEP).	Environmental Performance Enhancement Programme principles, requirements and potential use for excluding industrial installations from the list of the Barents region "Hot Spots" were discussed both by industrialists and by the representatives of Rosprirodnadzor and The Ministry for Natural Resources and Environment of the Republic of Karelia. In Naryan-Mar, EPEP principles and opportunities for local/regional participation in EPEP approval procedure were discussed with the top management of the Nenets Okrug Department for Natural resources, Environment and Agroindustrial Complex and with the representatives of municipal authorities.
Report on the discussions, conclusions and recommendations of the workshops, including lessons learnt for SHE about the	The Report is prepared by EIPC and submitted to SHE and NEFCO.

Planned	Achieved
value/use of the supporting activity as an instrument for enhancing “Hot Spot” exclusion, prepared.	Additional information on the Nenets Okrug special consultations and training systematized and added at the end of November 2019.
Rationale for SA 3, 4, 5, 6 and 7 strengthened. Particular recommendations are made for the finalisation of SA 3 programme. Mutual understanding is achieved with AO “PKS-Vodocanal” concerning preparation of EPEP and its submission to the Inter-Departmental Commission (for official approval).	SA 3 programme is presented to the potential participants of the study tour. So far, representatives of the Karelian Unit of Rosprirodnadzor and Saint-Petersburg Vodocanal expressed their willingness to participate in SA 3. In Naryan-Mar, the Department for Natural resources, Environment and Agroindustrial Complex will run additional negotiations with MWWTP and inform EIPC on the progress. It is agreed that staff and experts of AO “PKS-Vodocanal” (Petrozavodsk WWTP), ZKH “Razvitie” Association (Housing and Utilities Sector), OOO "Domkopstroy"and EIPC will work together to prepare a kind of a retrospective EPEP. The Rationale using EPEP as a criterion for AO “PKS-Vodocanal” (Petrozavodsk WWTP) exclusion will be prepared by Nordic experts.
Relevant materials on MWWT sector workshop made available via the Barents co-operation web-pages with more targeted outreach.	EIPC is happy provide relevant materials for the further dissemination via the Barents co-operation web-pages. So far, all training materials are available via EIPC website.

Lessons Learnt

- Due to rapid changes in BAT/IEP/EPE related legislation and practices, both newcomers and trainees who participated in 1b workshops (both in Patrozavodsk and Naryan-Mar), received new information and answers to questions raised earlier. Information and training materials attracted interest of all attendees, who requested additional information and methodological support.
- Analysis of achievements and difficulties of the first national pilots (18 installations preparing to obtain IEPs in 2019) attracted interest of all trainees, since this experience is unique and allows to understand which steps should be made to run Environmental Impact Assessment procedures for functioning industries and prepare applications for Integrated Environmental Permits. Haryaga Oil Drilling Industry (one of pilot installations) progress attracted interest of participants in Naryan-Mar.
- Municipal and regional authorities need additional information and explanations to participate in EPEP approval and – in future – in IEP granting procedures. Information needed can be disseminated via members of regional HEGs.
- The fact that Government Decrees establishing requirements to MWWT Plants and in particular sector-related BAT-AELs have not been passed (yet) prevents Vodocanals from finalising applications for Integrated Environmental Permits. Still, BAT-AELs are listed in the Russian MWWT BREF, and Vodocanals can run environmental performance assessments and draft EPEPs.
- For the Barents region, Environmental Performance Enhancement Programmes open a unique opportunity to unbiasedly assess improvements achieved by "Hot Spot" industries and support them both in obtaining Integrated Environmental Permits and in the exclusion process. Lessons learnt by the first (pilot) installations preparing EPEPs and submitting them to the Inter-Departmental Commission need to be promoted and wider disseminated in Russia.
- Involvement of well-known and experienced Nordic and Russian experts and trainers and especially participation of the Federal Rosprirodnazdor representative allowed widening the scope of training and discussions, adding "issues-upon-request" and identifying opportunities for SA 4, 5, 6 and 7.
- In the Russian Federation, there is a need to build capacity of Rosprirodnadzor, other federal and regional authorities, as well as Category I installations in the field of Best Available Techniques, Integrated Environmental Permits and Environmental Performance Enhancement Programmes is now recognised by all key stakeholders. This is why materials prepared for Barents BAT-related activities, are used by specialists working in various Russian regions.

Conclusion and recommendations

Petrozavodsk 2b workshop and Naryan-Mar 2b consultations trainees, participants and trainers agreed that:

- Environmental Performance Enhancement Programmes can play the role of evidences of:
  - environmental improvements (first of all – by "Hot Spot" Installations);
  - BAT implementation.
- Along with other criteria, EPEPs can be considered for the exclusion of "Hot Spots"; these criteria include the following positions:
  - staff trained;

- valid environmental permits held;
- information on key environmental aspects available (online reports, reviews, etc.).

– Specific criteria have to be based on Russian BAT requirements (for MWWT — Russian BREF ITS 10-2015; it is expected that Government Decrees establishing requirements to MWWT Plants and in particular sector-related BAT-AELs will be passed in November 2019).
– Smaller MWWTP have the right to apply for Integrated Environmental permits, and since BAT-related requirements are logical and achievable, it is likely that many of these plants will explore BAT opportunities.
– Smaller MWWTP need special guidance for the development of their reconstruction projects; it would be logical to prepare a concise guidance document to be disseminated at least in the Barents region.
– AO "PKS-Vodocanal" (Petrozavodsk WWTP) has been running environmental modernisation programmes since 2012. By 2019, Vodocanal has fully achieved BAT-AELs set by Russian BAT requirements (ITS 10-2015) and established by HELCOM.
– AO "PKS-Vodocanal" (Petrozavodsk WWTP) management is prepared to develop a retrospective Environmental Performance Enhancement Programme in accordance with the official requirements (Minprirody Order of 17 December 2018 No 666) with the support of Russian BAT experts and EIPC staff.
– Nordic experts are prepared to create a special chapter (rationale) to explain why a retrospective EPEP is prepared, submitted to the Inter-Departmental Commission and which way the approved EPEP is intended to be used in the "Hot Spot" exclusion procedure.
– Preparation of the retrospective EPEP has to be started as soon as possible (preferably – immediately); corrected ToR 4+5 is needed to be approved urgently.
– EPEP has to be submitted to SHE to be considered and commented. AO "PKS-Vodocanal" (Petrozavodsk WWTP), BAT experts and EIPC staff are prepared to provide additional details and make necessary improvements.
– Barents region stakeholders (and first of all — the Ministry for Natural Resources and Environment and Karelian Unit of Rosprirodnadzor) have to be informed on the progress of EPEP development and discussion in all cases. The Ministry has to make sure that the representative of the Republic of Karelia participates in the analysis of EPEP and in online voting organised by the Inter-Departmental Commission (presumably in November-December 2019).
– The Ministry for Natural Resources, Environment and Agroindustrial Complex of the Nenets Autonomous Okrug is prepared to participate both in EPEP discussions and in IEP granting procedure (when the legislation allows) and need to be informed on the progress in the new IEP granting procedure development.

Acknowledgements

The Environmental Industrial Policy Centre (Russian BAT Bureau) would like to express deep gratitude to the members of the Working Group on Environment and Subgroup on Hot Spots Exclusion, Nordic Environment Finance Corporation, Nordic experts, who contributed towards the workshop preparation and running. We are grateful to Vitaly Ostapchuk, Technical Director of AO "PKS-Vodocanal" (Petrozavodsk WWTP) for his hospitality, professionalism and most active participation in SA 1 and 2. We would like to thank the Ministry for Natural Resources and Environment and the Ministry for Industry and Trade of the Russian Federation, Rosprirodnadzor and its Karelian regional Unit, the Ministry for Natural Resources and Environment of the Republic of Karelia, the Swedish-Karelian Business and Information Centre (and personally by Vera Meshko), The Department for Natural

resources, Environment and Agroindustrial Complex of the Nenets Autonomous Okruk (and personally Yana Voitsekhovskaya), Russian experts, all regional partners and attendees of the workshop and special consultations for their openness, great support, competent and resourceful advice and active participation in the event.

Attachment 2

SA No 2: 'Preparing industry practitioners and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops using experience of the Nordic countries in the field of BAT and technical innovations'

SA No 2a: 'Preparing Municipal Wastewater Treatment industry practitioners and other important stakeholders to BAT implementation via sector-related / industrial site-based workshops using experience of the Nordic countries in the field of BAT and technical innovations'

Place
Pietary Hotel, Petrozavodsk, Russia
Time:
9-10, October 2019

Place
Naryan-Mar City Council, Russia
Time:
26, November 2019

PROGRAMME

Target Audience: industry practitioners from Municipal Wastewater Treatment Plants located in the Barents region (mostly, Category I and Hot Spot List installations) representatives of the environmental authorities (Rosprirodnadzor and regional ministries), MWWT experts

Presenters and discussants:

- **Ulf Bjällås,** Fröberg & Lundholm Advokatbyrå

- **Dmitry Danilovich**, Head of the Centre for Technical Policy and Modernisation, “Municipal Services and Urban Environment Association”, Head of the Technical Group 10 (leading development of Russian MWWT BREF)
- **Andrey Epov**, Chief technical specialist, TWW Treatment Water, member of the Technical Group 10 (leading development of Russian MWWT BREF)
- **Henrik Forsstrom**, Senior Adviser, NEFCO (**Naryan-Mar Consultations**)
- **Tatiana Guseva**, Deputy Director (Research), EIPC; member of TC 113 on BAT
- **Matti Iikkanen**, Wastewater Treatment Expert, NEFCO **(Naryan-Mar Consultations)**
- **Alexander Indyk**, Deputy Head of Department for Land Supervision, Rosprirodnadzor (Moscow)
- **Jyrki Laitinen**, Finnish Environmental Institute (SYKE), SHE Group Expert (TBC)
- **Rickard Natjehall,** Swedish Environmental protection Agency
- **Kari Pirkanniemi**, Environmental Counsellor, Regional Administration of Southern Finland
- **Kirill Schelchkov**, Deputy Head of the Department for Standardization, Methodology and BAT Assessment, EIPC
- **Kristina Svinhufvud,** Swedish SHE Task Force Expert (Waste Water), Swedish Environmental Protection Agency
- **Irina Tikhonova**, Associate Professor at the Department for Industrial Ecology, Dmitry Mendeleev University of Chemical Technology of Russia
- **Victoria Venchikova,** Deputy Head of the Department for State Policy in the Field of Environmental Protection, The Ministry for natural Resources and Environmental Protection (video)

Independent study (e-learning)	**Training course participants representing MWWTP have to prepare short analytical papers describing their plants (capacity, performance, challenges, BAT compliance, etc.)** It is supposed also that they study (if necessary) BAT-related normative, methodical and informational documents uploaded to BAT Bureau Portal: • Go to www.burondt.ru in Mozilla Firefox, Opera or Google Chrome • Click **‘Личный кабинет’** on the main page • Fill in the fields: Login: **training@eipc.center** Password: **uU8Vb6eBjn** • Find the tab ‘**Документы Мероприятия. НДТ и КЭР’** and download all available documents

Intensive course of practical exercises and lectures (Petrozavodsk)		
09.10.2019: all participants		
9.00	*Transfer to AO "PKS-Vodocanal" (Petrozavodsk WWTP)*	
9.30 – 12.30	Site visit On-site step by step explanation of: – Vodocanal reconstruction results – Technological processes – BAT compliance issues – Self-monitoring practices	Hosted by Vitaly Ostapchuk, Technical Director of AO "PKS-Vodocanal" (Petrozavodsk WWTP)
13.00 – 13.45	*Transfer to Pietari Hotel*	
13.00 – 13.45	*Lunch*	

	Practical exercises for Vodocanal managers and engineers		**Parallel session for environmental authorities (Rosprirodnadzor and regional ministries / departments)**	
13.45– 14.45	BAT requirements: Integrated Environmental Permits, Environmental Performance Enhancement Programmes (Update)	D. Danilovich	BAT / IED legislation: recent developments	V. Venchikova (video)

14.45 – 15.30	Wastewater treatment processes and equipment – Technological scheme – Mechanical treatment	D. Danilovich A. Epov	Federal Project “Environment”. Key aspects of the National Report (expectations)	T. Guseva O. Grevtsov
15.30 – 16.00	*Coffee break*			
16.00 – 17.00	Wastewater processes and equipment – Biological treatment – Treated water disinfection – Sludge management	D. Danilovich A. Epov	IEP granting procedure. Assessment / environmental expertise of IEP applications	I. Tikhonova T. Guseva
17.00 – 17.30	*Discussion*		*Discussion*	

10.10.2019				
Practical exercises for Vodocanal managers and engineers			**Parallel session for environmental authorities (Rosprirodnadzor and regional ministries / departments)**	
9.00 – 10.00	Russian BREF on Municipal Wastewater Treatment (ITS 10 – 2015) Emissions BAT-AELs (Technological parameters)	A. Epov	Rosprirodnadzor Administrative Provisions for granting Integrated Environmental Permits to Category I Installations	T. Guseva

10.00 – 11.00	Self-monitoring requirements Continuous self-monitoring	A. Epov I. Tikhonova	Vodocanals as Category I Installations: BAT compliance issues	G. Sambursky
11.00 – 11.20	*Coffee break*			
11.20 – 12.30	Environmental Performance Enhancement Programmes Analysing AO "PKS-Vodocanal" (Petrozavodsk WWTP) EPEP. Technical and economic aspects	V. Ostapchuk A. Epov	Environmental Performance Enhancement Programmes of Category I installations: development and approval by the Inter-Departmental Commission	T. Guseva O. Grevtsov
12.30 – 13.00	Key approaches to the development of IEP applications and /EPEPs Cases described by the trainees. GAP analysis (continuation)	A. Epov	Environmental self-monitoring requirements. Using continuous self-monitoring data for decision-making	I. Tikhonova
13.00 – 13.45	*Lunch*			
13.45 – 14.30	Key approaches to the development of IEP applications and /EPEPs Cases described by the trainees. GAP analysis (continuation)	A. Epov	Environmental inspections: assessing and enforcing BAT compliance	T. Guseva

All participants		
14.30 – 15.40	Environmental performance of Municipal Wastewater Treatment Plants in Sweden / Finland Introduction to the study tour programme	K. Svinhufvud / J. Laitinen
15.40 – 16.00	*Coffee break*	
16.00 – 16.40	BAT/BREF/EPEP instruments for the exclusion of the List of Hot Spots	R. Natjehall
17.00 – 17.30	Discussion	

Special consultations / professional advice to smaller MWWT facilities **Naryan-Mar 26.11.2019**		
Training / discussions		
10.00 – 13.00	Key topics: – Status of sewerage systems in small and medium-sized towns: main issues – Design and Construction of MWWTP: key principles – Operation and maintenance of MWWTP: Steps for Best Practices – Opportunities for the (environmental) performance improvement – Principles of setting requirements to MWWTP design and selecting project design companies – Information of the project design companies	Henrik Forsstrom Matti Iikkanen Andrey Epov
13.00 – 14.00	*Lunch*	

14.00 – 17.00	Key topics: – The National Project “Environment” (“Ecology”) and the Federal Project “Best Available techniques” – Integrated Environmental Permits: the new permit granting procedure in Russia – Requirements to Environmental Performance Enhancement Programmes – Participation of Municipal and Regional Authorities in Permit Granting Procedures	Tatiana Guseva Andrey Epov

Attachment 3
BAT-related Requirements to Municipal Wastewater Treatment Plants

In accordance with Governmental Decree № 1379 signed on 29 October 2019 (https://www.garant.ru/products/ipo/prime/doc/72845200/), setting the Rules for categorizing water bodies for the purpose of establishing BAT-related technological parameters for WWT, all water bodies within Russian Federation are split into four categories:

- **Category A.** The most protected or most vulnerable water bodies.

- **Category B.** The main group of water bodies.

Category B includes **Azov, Black, Baltic, Caspian and the Sea of Japan and rivers or their parts located within the same water resource region and lacking enough data that allow their assignment to Cat A, C, D**

- **Category C.** Environmentally sustainable water bodies.

Russian inland seas (minus Azov, Black, Baltic and Caspian seas and Sea of Japan) and oceans.

- **Category D.** Water bodies with a particularly low nitrogen and phosphorus content.

The categorization of water bodies (and/or their parts) and water resource regions is carried out by the Federal Agency for Water Resources (http://voda.mnr.gov.ru/) and its regional offices (territorial bodies).
The most stringent requirements are for Cat. A; the least – for Cat. D water bodies
It is important to remember that wastewater treatment requirements and techniques recommended as BAT are dependent on the size of the waste water treatment plant/facility (WWTP)
Table 1.18 Capacity classification of municipal WWTPs

Designation of the WWTP category	**BOD_5 load on the WWTP from city/town wastewater, kg/day[1)]**	**Assumed population, PE**	**Incoming wastewater flow, m^3/day (approximately)[2]**
Giant	More than 180,000	More than 3 mln	Above 600,000
Major	60,000 — 180,000	1–3 mln	200–600 thous.
Very large	12,000 — 60,000	200,000 — 1 mln	40–200 thous.
Large	3,000 — 12,000	50,000 — 200,000	10–40 thous.
Intermediate-sized	1200–3000	20,000 — 50,000	4–10,000
Moderate-sized	300–1200	5,000 — 20,000	1–4 thous.
Small	30–300	500–5 thous.	100–1000
Very small	3–30	50–500	10–100

[1)] The capacity range of treatment facilities should be calculated as an average value for 3 consecutive calendar years preceding the year of filing an integrated environmental permit (IEP) but it should not be higher than the WWTP design capacity. The determination of water volume withdrawn from and drained into water body is carried out using the procedure approved by the Ministry of Natural

Designation of the WWTP category	BOD_5 load on the WWTP from city/town wastewater, kg/day[1)]	Assumed population, PE	Incoming wastewater flow, m^3/day (approximately)[2]
Resources of the Russian Federation. If the WWTP was commissioned in less than 3 calendar years preceding the year of filing an IEP than an applicant WWTP should calculate the average volume of wastewater discharged into the water body starting from the commissioning date. For WWTPs still under construction/not put into operation the volume of waste water discharged into a water body is equal to the annual average capacity [2)] at a gross sewage disposal flow rate, assumed for these calculations at the lower end of the main range for the majority of municipal WWTP is about 200 litre per registered citizen of the population centre.			

Moreover, to fit a WWTP into the right category, the distance (by the length of the water course) from the next organized discharge point shall be:
- very small – at least1 km;
- small – at least 3 km;
- moderate-sized – at least 10 km.

All municipal WWTP from very small to moderate-sized with discharge points closer than mentioned above should be indiscriminately considered as moderate-sized WWTP.
Taking all abovementioned data into account we recommend following techniques and requirements for treated water:

1. **Below 100 cubic meters per day for Cat B,C,D with temporary human presence (less than 100 days per year) – non-biological (physical chemical) WWT.**

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	15
Suspended solids	25
BOD_5	80
COD	35[2)]
Nitrogen of ammonium salts	5[2)]
Nitrogen of nitrates	1[2)]
Nitrogen of nitrites	1
1) These values are shown as annual average values. 2)When discharging into a water body covered by international agreements, the requirements of the agreement are applied in cases when they are more stringent than these values, or when they refer to other substances (parameters).	

2. **Below 100 cubic meters per day for Cat. B, below 4000 cubic meters per day for Cat. C, below 10 000 cubic meters per day for Cat. D – full biological treatment**

Technological parameter: Pollutant concentration in treated wate	Value, mg/l, no more than [1)]
Suspended particles	15
Suspended solids	12
BOD_5	80
COD	8
Nitrogen of ammonium salts	18
Nitrogen of nitrates	0,25
Nitrogen of nitrites	5
1) These values are shown as annual average values. 2)When discharging into a water body covered by international agreements, the requirements of the agreement are applied in cases when they are more stringent than these values, or when they refer to other substances (parameters).	

3. From 4000 to 10 000 cubic meters per day for Cat. B – nitri-denitrification.

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	15
Suspended solids	12
BOD_5	80
COD	2
Nitrogen of ammonium salts	12
Nitrogen of nitrates	0,25
Nitrogen of nitrites	5
1) These values are shown as annual average	

4. From 100 to 10 000 cubic meters per day for Cat. B - Biological treatment with the nitrogen removal and chemical removal of phosphorus, treatment with the biological removal of nitrogen and biological and chemical removal of phosphorus.

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	15
Suspended solids	12
BOD_5	80*
COD	1,5
Nitrogen of ammonium salts	12
Nitrogen of nitrates	0,25
Nitrogen of nitrites	1 -1,5**
1) These values are shown as annual average	

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
* When wastewater is discharged into water bodies providing water for drinking and domestic supply to 2 or more regions of the Russian Federation, according to the List approved by the Governmental Decree No. 2054-r of the Russian Federation dated December 31, 2008 than technological indicator for COD is equal 40 mg /l ** The lesser value is for newly built small and medium WWTPs (1-10000 cubic meters per day), the greater value is for small treatment plants (up to 1000 cubic meters per day), as well as for reconstructed small and medium treatment plants.	

5. **Above 10 000 cubic meters per day for Cat. D - Biological treatment with the nitrogen removal (nitri-denitrification)**

Technological parameter: Pollutant concentrat treated water	Value, mg/l, no more than [1)]
Suspended particles	15
Suspended solids	10
BOD_5	80
COD	2
Nitrogen of ammonium salts	9 -12*
Nitrogen of nitrates	0,2
Nitrogen of nitrites	5
[1)] These values are shown as annual average	
* The lowest value is for new facilities (or reconstructed by the demolition of old structures and the construction of new ones, if there is sufficient space). A range of values above the lowest one is used for reconstructed WWTPs, in the presence of a detailed quantitative justification confirming that achieving the lowest value by existing WWTP is not possible.	

6. **Above10 000 cubic meters per day for Cat. B – Biological treatment with nitrogen and phosphorus removal**

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	10 -14*
Suspended solids	8
BOD_5	80
COD	1
Nitrogen of ammonium salts	9-12*
Nitrogen of nitrates	0,15 - 0,2
Nitrogen of nitrites	1
1) These values are shown as annual average	

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
* The lowest value is for new facilities (or reconstructed by the demolition of old structures and the construction of new ones, if there is sufficient space). A range of values above the lowest one is used for reconstructed WWTPs, in the presence of a detailed quantitative justification confirming that achieving the lowest value by existing WWTP is not possible.	

7. Above 10 000 cubic meters per day for Cat. B – Biological nitrogen removal and chemical phosphorus removal, biological treatment with nitrogen and phosphorus removal by acidification (prefermentation), biological treatment with nitrogen removal and biological and chemical phosphorus removal, biological treatment with nitrogen removal and biological and chemical phosphorus removal by acidification (prefermentation)

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	10 -14*
Suspended solids	8
BOD_5	80**
COD	1
Nitrogen of ammonium salts	9-12*
Nitrogen of nitrates	0,125 - 0,15*
Nitrogen of nitrites	0,7
* The lowest value is for new facilities (or reconstructed by the demolition of old structures and the construction of new ones, if there is sufficient space). A range of values above the lowest one is used for reconstructed WWTPs, in the presence of a detailed quantitative justification confirming that achieving the lowest value by existing WWTP is not possible. **When wastewater is discharged into water bodies providing water for drinking and domestic supply to 2 or more regions of the Russian Federation, according to the List approved by the Governmental Decree No. 2054-r of the Russian Federation dated December 31, 2008 than technological indicator for COD is equal 40 mg /l	

8. Below 10 000 cubic meters per day for Cat. A – biological nitrogen removal or biological nitrogen and phosphorus removal with tertiary treatment (filter / filters) - bioreactors (with or without reagent for additional precipitation of phosphorus) and lagoons for tertiary treatment.

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	10
Suspended solids	5
BOD_5	40
COD	1

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Nitrogen of ammonium salts	9
Nitrogen of nitrates	0,1
Nitrogen of nitrites	0,7

9. Below 40 000 cubic meters per day for Cat. A – MBR reactors with nitrogen and phosphorus removal, 10 000 and above – techniques for nitrogen and phosphorus removal with tertiary treatment (filter / filters) - bioreactors (with or without reagent for additional precipitation of phosphorus)

Technological parameter: Pollutant concentration in treated water	Value, mg/l, no more than [1)]
Suspended particles	5
Suspended solids	3
BOD_5	40
COD	1
Nitrogen of ammonium salts	9
Nitrogen of nitrates	0,1
Nitrogen of nitrites	0,5

Disinfection.

Disinfection of treated water with sodium hypochlorite or other chlorine reagents (except chlorine), without dechlorination – applicable for the following Cat. B-D WWTPs only:

- For existing WWTPs up to 40,000 cubic meters per day
- For reconstructed WWTPs up to 4000 cubic meters per day
- For new WWTPs up to 1000 cubic meters per day

The technological parameter for the residual chlorine content is 2.0 mg / dm^3.

Chlorine disinfection of treated waters with dechlorination for Cat. B-D from 40,000 to 600,000 cubic meters per day, disinfection of treated waters with sodium hypochlorite or other chlorine reagents (except chlorine), with dechlorination up to 600,000 cubic meters per day.

The technological parameter for the residual chlorine content is 0.2 mg / dm^3 for WWTPs up to 200,000 cubic meters per day and 0.1 mg / dm^3 for WWTPs with a capacity 200,000 cubic meters per day or more.

UV disinfection is a universal, most recommended technique.

Technical BAT are universally applicable without regard to water body Category

Mechanical Treatment

The universal use of gratings and degritters / sand removing devises (or similar devices).

Waste and sand washing - for WWTPs above 4000 cubic meters per day

Primary sedimentation tanks (or similar devices) for WWTPs above 40,000 cubic meters per day under the conditions that they do not impair the removal of nitrogen and phosphorus

BAT for Sludge Treatment (BAT 11- 13)

Sludge thickening and drying on sludge drying grounds – for WWTPs up to 4000 cubic meters per day

Thickening and drying on sludge sites using flocculant - for WWTPs up 40,000 cubic meters per day

Mechanical dewatering is the universal preferred technique, including filter bags and geotubes.

Sludge composting - for WWTPs from 10,000 to 600,000 cubic meters per day

Anaerobic fermentation, thermal drying and incineration - for WWTPs from 200,000 cubic meters per day (justification for lower capacities is required).

BAT regarding the management of energy carriers, raw material and by-products in the municipal wastewater treatment process (BAT 14)
Automatic reagent consumption control systems for wastewater treatment and sludge processing allowing for batching in the sufficient minimal quantities needed for the operation – for WWTPs above 10 000 cubic meters per day

The use of pumping units for recycling activated sludge from secondary settling chambers – ***for WWTPs above 10 000 cubic meters per day.***

The use of resource efficient techniques allowing waste water phosphorus removal mainly due to biological processes that ensure the reagent consumption– ***for WWTPs above 40 000 cubic meters per day***.

The use of aeration systems (air pumps and dispersion agents), guaranteeing in total the energy expenditures of the biological treatment process not exceeding 0,7 kWt per h/kg· – ***for WWTPs above 40 000 cubic meters per day***.

Application of non-technical (administrative) BATs
BAT 1 regarding investment planning and terms of reference for design, modernization and the development of existing municipal WWTPs involving the determination of future costs based on measurement data of the dynamics of relative wastewater disposal as compared to the population of the community,
BAT 2 regarding the control (self-monitoring) of non-residential 9industrial) wastewater composition involves the use of all (if applicable) methods listed in table 5.1.
Table 5.1: A list of BAT 2 techniques

№	Method	Field of application as BAT
a	Implementation by the user of a yearly wastewater pollution control plan, approved in the established order and aimed at the control of wastewater of users that may be a potential threat to the CSS and water bodies.	General
b	The necessary contacts with the users, in accordance with current legislation on discharge standards, to prevent any harm to the centralized sewage system	General

c	The necessary contacts with the users in line with current legislation on the separation of production and surface flows (in communities with surface water discharge systems)	General
d	The necessary contacts with the users as stated in the current on prevention of discharges of non-polluted water into the centralized sewage system	General
e	Treatment of no less than 70 % of the yearly surface runoff water (SRW)	Only for centralized wastewater treatmen designed for SRW collection
f	Division of wastewater flows into polluted and relatively clean parts, the relatively clean part being discharged without treatment	Only for centralised surface runoff treatm systems

BAT 3 regarding the control of the wastewater arriving at the WWTP and the discharge of treated wastewater involves the use of all (if applicable) methods listed in table 5.2.
Table 5.2: A list of BAT 3 techniques

№	Method	Field of application as BAT
a	Measuring incoming wastewater (or treated water) flow using suitable appropriately certified instruments	General
b	The observance of an established programme for production control of water quality	General
c	Water sampling in accordance with certified methods	General
d	Automatic sampling equipment used in the accumulative 24h sampling mode, proportionally to the incoming (or treated) flow.	For major and larger WWTP 1)
e	Organisations (departments) with the appropriate certification shall carry out the analysis of samples taken from incoming wastewater according to the full list of parameters subject to discharge control and, additionally, of substances that are practically absent in wastewater, however being formed during the wastewater treatment process (only in respect to treated water) according to the established periodicity, as defined by the capacity of the plant.	General
f	Additional sample analysis of incoming water to determine total nitrogen and phosphorus	Municipal wastewater treatment plants; large and above.

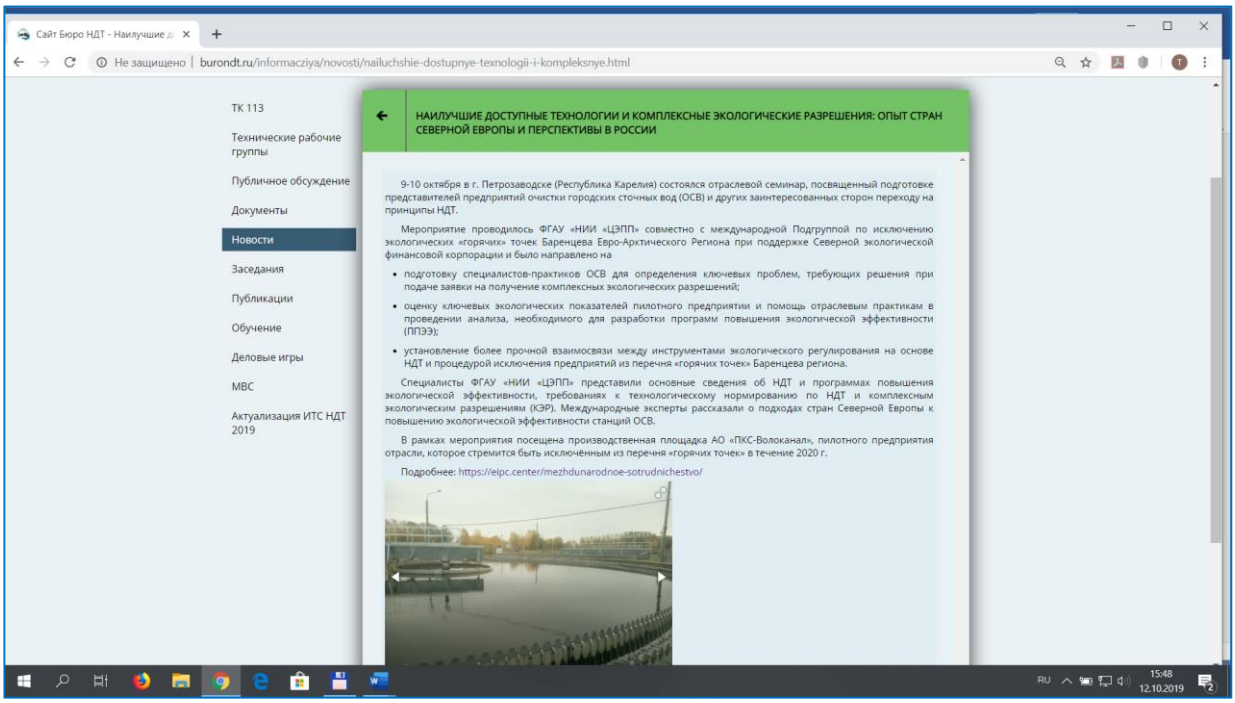
g	A spare sample shall be stored in a refrigerator (a part of the daily sample of wastewater) during 7 days for a repeated control, should problems arise concerning the topicality of wastewater or volley discharges	At municipal WWTPs where there are problems concerned with volley discharges from industrial users
h	The appropriate recording, storage and analysis of the information on the quantity and quality of incoming wastewater in accordance with the operating procedure	General
1) Here and hereinafter in this section the WWTP size categories as in section 1 are applied (see table 1.18). At this, the note, «up to very large, inclusive" means that this field of application covers all plants, whose capacity is very large or less than very large. The note «from large and above» means that the field of application covers all plants whose capacity is large or more than large.		

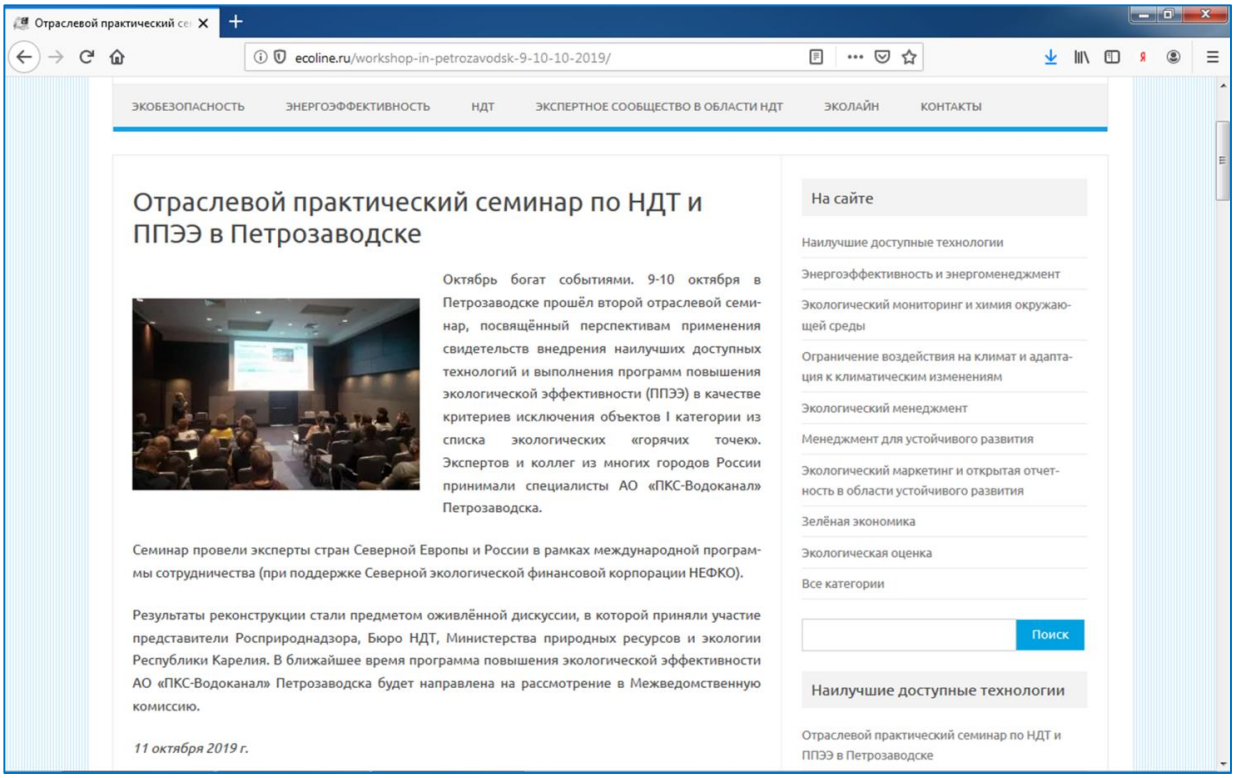
BAT 13 regarding process and treatment quality regulation involves the use of all methods listed in table 5.19.
Table 5.19: A list of BAT 13 techniques

№	Method	Field of application as BAT
a	The use of technological procedures with detailed descriptions of the technological processes of the concrete treatment facilities, the range of technological standard mode operating parameters of the facilities under consideration as well as an action plant for non-standard and emergency situations.	General
b	Qualified personnel or a service agreement with a qualified organization.	General
c	A production control programme for the installations.	General
d	The appropriate recording, storage and technological analysis of the results of the production control programme	General

Attachment 3

News on the Sector Practical Workshop Programme (Petrozavodsk 2b Workshop)

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ЭКОБЕЗОПАСНОСТЬ
ЭНЕРГОЭФФЕКТИВНОСТЬ
НДТ
ЭКСПЕРТНОЕ СООБЩЕСТВО В ОБЛАСТИ НДТ
ЭКОЛАЙН
КОНТАКТЫ
Отраслевой практический семинар по НДТ и ППЭЭ в Петрозаводске
Октябрь богат событиями. 9-10 октября в Петрозаводске прошёл второй отраслевой семинар, посвящённый перспективам применения свидетельств внедрения наилучших доступных технологий и выполнения программ повышения экологической эффективности (ППЭЭ) в качестве критериев исключения объектов I категории из списка экологических «горячих точек». Экспертов и коллег из многих городов России принимали специалисты АО «ПКС-Водоканал» Петрозаводска.
Семинар провели эксперты стран Северной Европы и России в рамках международной программы сотрудничества (при поддержке Северной экологической финансовой корпорации НЕФКО).
Результаты реконструкции стали предметом оживлённой дискуссии, в которой приняли участие представители Росприроднадзора, Бюро НДТ, Министерства природных ресурсов и экологии Республики Карелия. В ближайшее время программа повышения экологической эффективности АО «ПКС-Водоканал» Петрозаводска будет направлена на рассмотрение в Межведомственную комиссию.
11 октября 2019 г.
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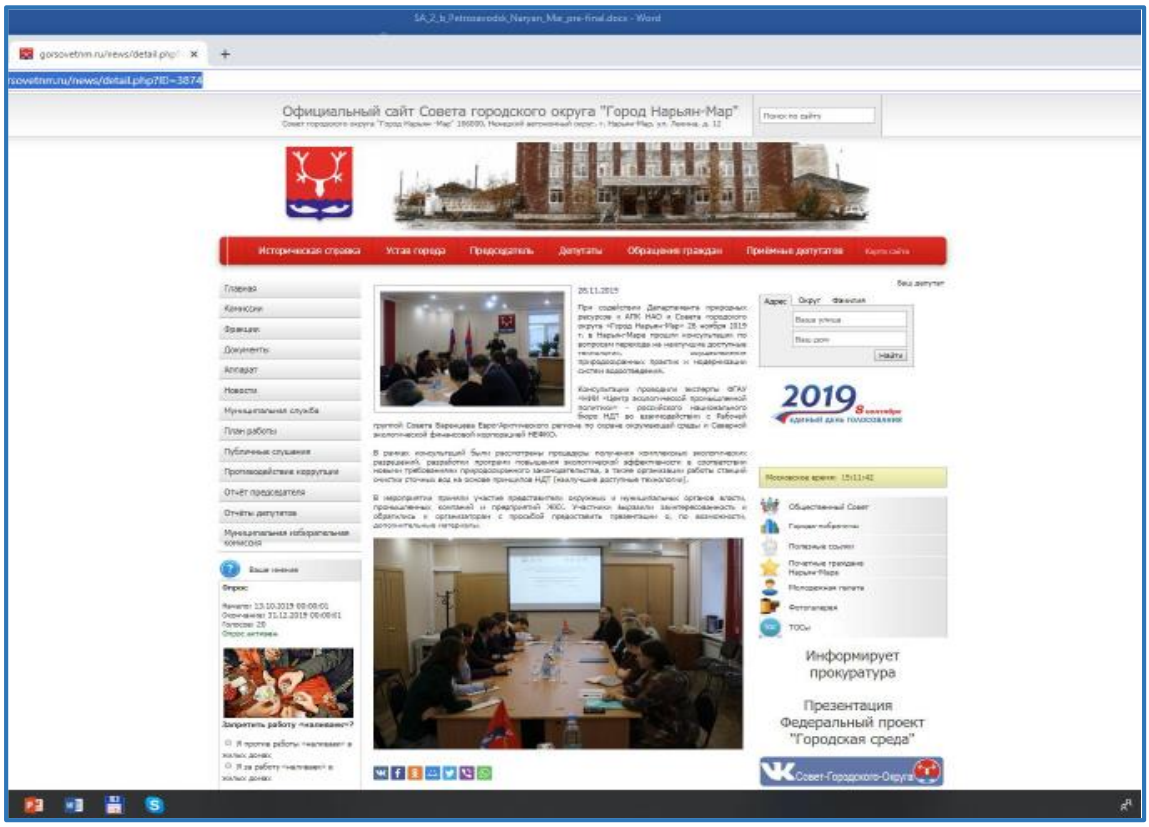

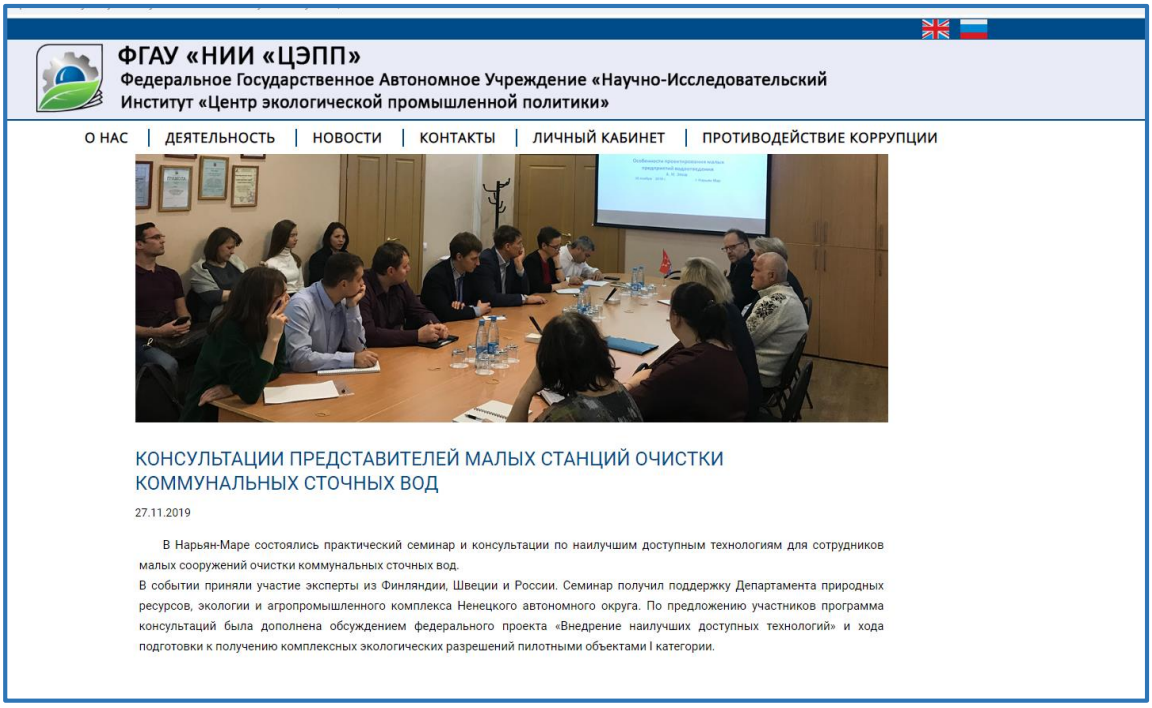

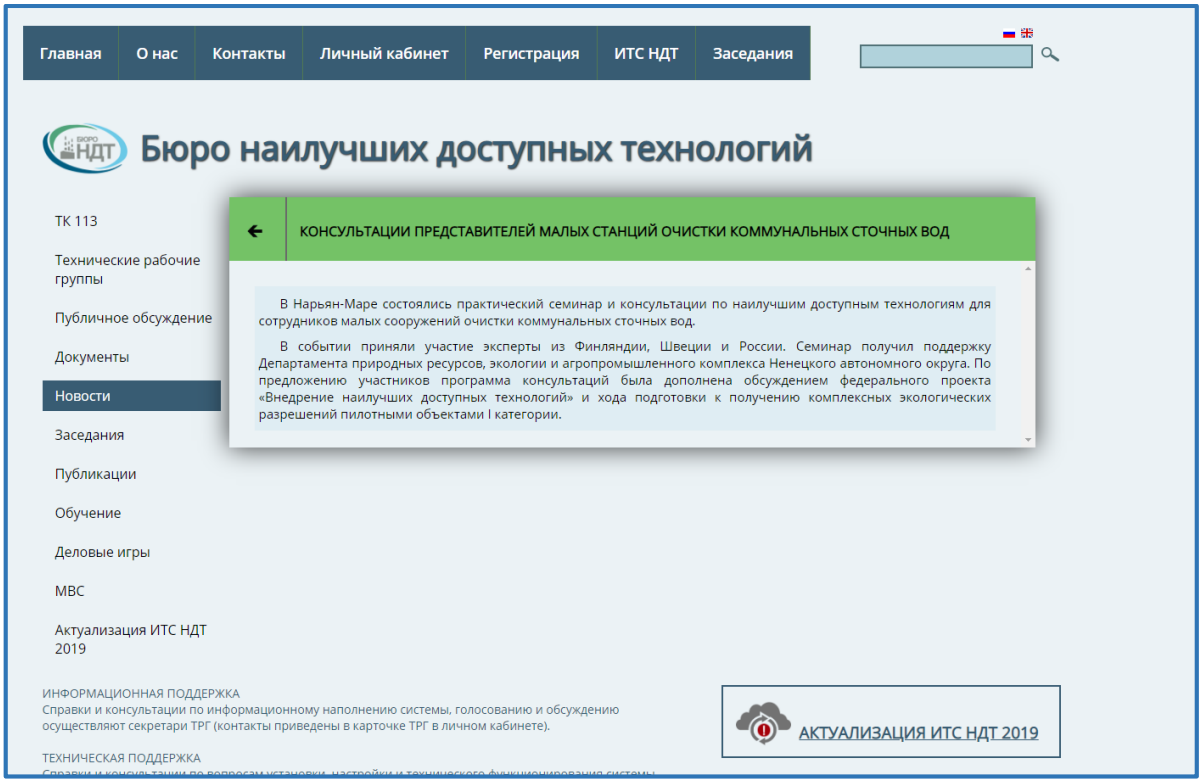
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Актуализация ИТС НДТ 2019
КОНСУЛЬТАЦИИ ПРЕДСТАВИТЕЛЕЙ МАЛЫХ СТАНЦИЙ ОЧИСТКИ КОММУНАЛЬНЫХ СТОЧНЫХ ВОД
В Нарьян-Маре состоялись практический семинар и консультации по наилучшим доступным технологиям для сотрудников малых сооружений очистки коммунальных сточных вод.
В событии приняли участие эксперты из Финляндии, Швеции и России. Семинар получил поддержку Департамента природных ресурсов, экологии и агропромышленного комплекса Ненецкого автономного округа. По предложению участников программа консультаций была дополнена обсуждением федерального проекта «Внедрение наилучших доступных технологий» и хода подготовки к получению комплексных экологических разрешений пилотными объектами I категории.
ИНФОРМАЦИОННАЯ ПОДДЕРЖКА
Справки и консультации по информационному наполнению системы, голосованию и обсуждению осуществляют секретари ТРГ (контакты приведены в карточке ТРГ в личном кабинете).
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