Terms of Reference for the Intersessional Correspondence Group on cooperation between Radioactive Substances Committee (RSC) and the Offshore Industry Committee (OIC) (ICG-RSC/OIC)

**Background and purpose**

1. RSC 2020 discussed how to maintain the good cooperation between OIC and RSC, and further ease the dialogue between the two committees. A proposal was sent to OIC 2020, where it was positively received. The work of the two committees relate to the prevention of pollution resulting from discharges from the offshore oil and gas industry and the committees work influence the national regulation of the offshore oil and gas industry. It would therefore be beneficial to create a systematic route for dialogue between the two committees. To take this work forward RSC and OIC propose to establish an ICG-RSC/OIC under the Terms of Reference below.
2. RSC 2023 agreed to include additional areas of common interest contributing to several tasks under the NEAES 2030 operational objectives S3O1 on discharges of radioactive substances and S3O2 on environmental concentrations of radioactive substances.

**Scope of work**

1. The ICG will provide a forum for dialogue between OIC and RSC in areas where the two committees have interests, such as discharges from the offshore oil and gas industry containing radioactive substances. The areas for common interest include, among others:
	1. discharge of produced water, produced sand etc.;
	2. results on the assessment of discharge data and on the monitoring / modelling of discharges of radioactive substances;
	3. results from the monitoring / modelling of the environmental concentrations of radioactive substances around offshore installations;
	4. specification of common indicator(s) for discharges and environmental concentrations from the non-nuclear sector;
	5. application of BAT to prevent or reduce discharges from the oil and gas installations and whether related OSPAR activities or measures (e.g. reporting) would be beneficial;
	6. emerging data and research on the build-up of NORM activity in sediments in the vicinity of offshore platforms and the potential environmental impacts arising from presence of NORM and other hazardous materials in pipe scales and identification of further research needs (Science Agenda);
	7. possible implications of impact assessments for management decisions (e.g. leaving infrastructure in-situ).

**Objective**

1. With regard to the scope of work, the ICG shall carry forward work on these issues and constitute a platform for the two committees to cooperate in relevant areas. The ICG will report to subsequent RSC and OIC meetings.

**Participants**

1. In accordance with OSPAR Rules of Procedure, the ICG will be opened to all Contracting Parties and Observers in both committees. The ICG will be convened by Carol Robinson and Elin Ohlin (Norway). RSC experts from the UK and OIC experts from DK, NL, NO and UK have agreed to participate.

**Working procedure**

1. The ICG will work via correspondence and meet as needed.

**Timetable**

1. To be agreed at first meeting of ICG-RSC/OIC. The ICG is intended to be open for the forthcoming years, with active work whenever deemed necessary by the ICG, OIC or RSC.

Intersessional Correspondence Group on cooperation between Radioactive Substances Committee (RSC) and the Offshore Industry Committee (OIC) (ICG-RSC/OIC)

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| ICG-RSC-OIC |
| RSC | NO | **Carol Robinson** | Co-convenor |
| RSC | NO | **Elin Ohlin** | Co-convenor |
| RSC | UK | Alastair Dewar |  |
| RSC | UK | Adam Stackhouse |  |
| OIC | DK | Charlotte Nielsen |  |
| OIC | NL | Stefan Hendrikse |  |
| OIC | NL | Judith van Gorp |  |
| OIC | NO | Astrid Jevne Mæland |  |
| OIC | UK | Saravan Marappan |  |

**Meeting of ICG on Cooperation between the OSPAR Radioactive Substances Committee (RSC) and the Offshore Industry Committee (ICG-RSC/OIC), 12 October 2023, by Teams**

**Present:**

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| **RSC** | **OIC** |
| Carol Robinson (DSA, Norway), Convenor | Saravanan Marappan (IEG-OPRED, UK) |
| Adam Stackhouse (Environment Agency, UK) | Ann Mari Vik Green (Norwegian Environment Agency, Norway) |
| Alastair Dewar (Cefas, UK) | Astrid Jevne Maland (Norwegian Environment Agency, Norway) |
|  | Judith van Gorp (SodM, NL) |
|  | Stefan Hendrikse (SodM, NL) |
| Laura de la Torre (OSPAR Secretariat) |

**Distributed in advance of the meeting** (to be uploaded to a dedicated SharePoint area to be set up by the Secretariat):

* Outline agenda
* Terms of Reference of the ICG
* PowerPoint slide on measurements of radioactivity in sediments in Norway, presented to RSC 2023 (paper referred to in the presentation will also be uploaded)
* Paper by Koppel et al, ‘Threshold values for the protection of marine ecosystems from NORM in subsea oil and gas infrastructure’, JER (2023).
* RSC(2) 19/8/01 – note from OIC to RSC on the application of BAT for discharges of NORM to the marine environment.

**Key points**

* The group was originally established in 2020 to aid communications between the committees between meeting cycles, following the extended timescales needed to prepare, respond, and report on previous queries, largely due to the mismatch of committee meeting schedules. However, Covid then intervened, and this was the first meeting of the group.
* Application of BAT:
	+ In accordance with OSPAR Agreement: 2018-01, RSC regularly submits and reviews information about the assessment and application of BAT and BEP in nuclear facilities. The question has been raised about whether BAT and BEP are also applied to limit radioactive discharges from other industries, notably oil and gas extraction and production. This led to earlier communications between the committees and the preparation and completion of a questionnaire. The results were reported in to RSC (RSC(2) 19/8/01).
	+ **It was agreed that the OSPAR Secretariat would redistribute RSC(2) 19/8/01 to the delegations of OIC who completed the questionnaire (OIC EAP members from Denmark, Germany, Ireland, Netherlands, Norway and UK) with a request to review and, if necessary, update the information before 1 December 2023.**
	+ The updated questionnaire responses will be reviewed at the next meeting to determine whether it could be concluded that, on this basis, BAT/BEP could also be considered to be applied to radioactive discharges or whether additional reporting would be appropriate.
	+ Norway mentioned a study on waste streams containing hazardous substances from offshore oil and gas installations that could have synergies with the work of the ICG. **It was agreed that Norway will share the outcomes if relevant to the group.**
* Measurements of radioactivity in sediments
	+ The presentation materials from RSC triggered a discussion of the extent to which environmental materials, and sediments, were routinely measured.
	+ RSC routinely reviews data on discharges and on measurements in seawater and other environmental materials, but not sediments. Kins Leonard had reviewed data on sediments for RSC (**Alastair agreed to track down the paper and presentation and upload to SharePoint site**).
	+ OIC tends to focus on reporting and reviewing effluent rather than environmental monitoring data. However, it was agreed that it would be useful to know more about whether and what environmental monitoring data was routinely collected by individual OIC member countries. **Attendees agreed to investigate and provide summary information before 1 December 2023.**
* Assessments of the potential environmental impact of (radioactive) discharges and residues from oil and gas platforms
	+ RSC performed screening assessments of the impact discharges of NORM from oil and gas installations as part of input to the recent thematic and QSR assessments. **It was agreed that key features of this work would be presented at the next OIC meeting.**
	+ An example of a paper from researchers in Australia was distributed. The purpose of this work is to provide assessments of environmental impact as an input to decisions about whether pipework (and possibly other infrastructure) can remain in place. It was noted that OSPAR Decision 98/3, on the Disposal of Disused Offshore Installations, did not cover pipework and that the Norwegian Environment Agency was undertaking related work. **It was agreed that work this subject would be of continuing interest and updates would be welcome at future meetings.**
* **It was agreed that the Secretariat will make available a SharePoint site for the ICG.**
* **Next meeting: first half of December 2023 – Secretariat will send doodle poll.**

**Meeting of ICG on Cooperation between the OSPAR Radioactive Substances Committee (RSC) and the Offshore Industry Committee (ICG-RSC/OIC), 6 December 2023, by Teams**

**Present:**

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| **RSC** | **OIC** |
| Carol Robinson (DSA, Norway), Convenor | Saravanan Marappan (IEG-OPRED, UK) |
| Elin Ohlin (DSA, Norway), | Astrid Jevne Maland (Norwegian Environment Agency, Norway) |
| Adam Stackhouse (Environment Agency, UK) | Stefan Hendrikse (SodM, NL) |
| Alastair Dewar (Cefas, UK) |  |
| Laura de la Torre (OSPAR Secretariat) |

**Key points**

* This meeting followed the discussions initiated at ICG-OIC-RSC(1) 2023.
* Application of BAT:
	+ All OIC EAP members have responded regarding the update of the questionnaire on the application of BAT on the offshore oil and gas industry: only Germany and the Netherlands had changes to the information reported in 2019 (RSC(2) 19/8/01). The updated version is saved in SharePoint.
	+ In discussion it was highlighted that OSPAR Recommendation 2001/01 for the Management of Produced Water from Offshore Installations resulted not only in a reduction of the oil discharges but also of the radioactive substances being re-injection of produced water the technique used.
	+ There were no conclusions yet regarding the application of BAT for radioactive substances for sand and scale.
	+ The Chair of RSC mentioned that the HERCA (Heads of European Radiation Competent Authorities) was looking into the application of BAT for the discharges of NORM mainly from land-based industries. There could be an exchange where OSPAR could present the outcome of the questionnaire and learn from the techniques applied in other industries.
	+ **It was concluded that the questionnaire showed that oil and gas offshore industry used BAT to reduce Produced Water discharges.**
	+ **The Chair of RSC will look into liaising with HERCA (Heads of European Radiation Competent Authorities) in relation to the application of BAT for NORM.**
	+ **The Chair of RSC will further consider if conclusions from the questionnaire could be extracted in relation to the sand and scale.**
* Environmental monitoring
	+ Norway presented the environmental monitoring of petroleum activities undertaken in the Norwegian Continental Shelf covering the water column (field surveys every three years) and the benthic habitats before exploration drilling, in particular cases, before and during production drilling and production, and after decommissioning of the field (regions surveyed every third year with surveys alternating between regions each year). Presentation is uploaded in SharePoint and includes references to reports available in English.
	+ The United Kingdom and the Netherlands commented they do not have routine environmental monitoring for radioactive substances, but it could be explored if there was information available under the decommissioning programmes.
	+ **Contracting Parties were encouraged to include monitoring of radioactive substances under monitoring environmental programmes for other potential pollutants, where appropriate, making the best use of their resources when surveys were planned.**
* Assessments of the potential environmental impact of (radioactive) discharges and residues from oil and gas platforms
	+ The ICG Convenor presented the outcome of the work undertaken by RSC in 2020 on modelling additional concentrations of NORM in seawater from discharges of produced water from the offshore oil and gas sector, including near and far field assessments.
* **RSC 2024 and OIC 2024 will consider the progress made by the ICG and revise the priorities of the group to update the ToR if appropriate.**
* **Next meeting: after the Committee spring meetings – Secretariat will send doodle poll.**

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| **Questions**  | **Country: Denmark** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | BAT is applied on all discharges of produced water. The technologies installed primarily focus on the reduction of oil discharged with produced water in order for CP’s to comply with the requirements of OSPAR recommendation 2001/1.The technologies either focus on cleaning the produced water or reducing the discharge.A high produced water reinjection rate will prevent discharge of produced water. Also, BAT in terms of equipment such as inlet heaters, hydro-cyclones and degasser will improve the separation process and PW cleaning before discharge. Continuous optimization of production chemicals is ongoing to improve separation processes and reduce OIW concentration. This is both in terms of adjusting rates, but also in substitution of chemicals with better performance both in terms of functionality and environment. Various initiatives has been undertaken to improve OIW performance and to ensure that it’s possible to maintain a high PW handling capacity in the process system.Requirements to use a risk based approach for the management of produced water discharges are being implemented according OSPAR requirements. This does currently not cover NORM. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | A high PW reinjection rate will lead to a corresponding reduction in the discharge of PW, including NORM. Use of scale inhibitor, which prevents the NORM scale in precipitating in the process system, will reduce the need for handling of NORM onshore. For facilities with high PW reinjection the NORM will be reinjected together with the PW. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Currently the industry have not identified specific measures that will reduce the discharge of NORM, however for facilities with a high degree of reinjection this will also lead to corresponding reduction of the discharges of NORM |
| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | For wells in sand reservoirs where reservoirs are not fracked, focus is on avoiding sand production from the reservoir by carefully designing the production envelope (production rates, well pressure etc.). On some installations sand flushing systems are used to clean sand for oil before discharge.The amount of sand production is very limited and sand collected in separators etc. is generally sent onshore for disposal. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | Avoiding sand production to the extent possible will also reduce discharge of sand with NORM and shipping sand to shore for processing. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | We are not aware of any measures that will reduce discharge of NORM in sand. |
| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | Scale from operations is removed from equipment offshore or onshore depending on the situation. When scale is removed offshore systems are installed to collect the scale and ship it onshore for processing.Focus on optimisation of scale inhibitor will prevent scale from precipitating in the process system. Onshore, NORM is removed by specialists and deposited onshore at a temporary disposal site. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | It is considered BAT to send NORM scale onshore for further handling. Further reduction in discharge of NORM is not considered possible. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | We are not aware of any measures that will reduce discharge of NORM in scale. |

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| **Questions**  | **Country: Germany** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | n.a. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
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| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
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| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | n.a.  |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
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| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
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| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | n.a.  |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
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| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
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| **Questions**  | **Country: The Netherlands** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | Depending on the reservoir characteristics, produced water is sometimes reinjected for environmental purposes and/or for maintenance in the reservoir, but not specifically as BAT for NORM discharge reduction.In other cases produced water is cleaned/filtered from oil, chemicals, etc and discharged. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | Application of reinjection can lead to 100% reduction of NORM discharge. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | No, these measures are not known |
| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | No BAT applied or known, sand is collected by using sand filters and depending on specific activity [Bq/kg] sand is disposed of in specially licensed waste centres. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | No BAT known.  |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | No other measures known besides using sand filters.  |
| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | NORM-contaminated process equipment is collected and brought onshore where it is cleaned to remove the NORM-scale. Depending on specific activity [Bq/kg] waste is disposed of in specially licensed waste centres. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | On the Netherlands Continental Shelf and onshore, scale is never discharged in the environment; it is treated as waste. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Unknown |

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| **Questions**  | **Country: Ireland** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | At present, the activity concentrations of NORM in produced water discharged by Ireland from its offshore installations are below detection limits. In parallel, Ireland is not aware of any measures to specifically reduce the discharges of NORM in produced water. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | Where relevant, the application of reinjection of produced water can lead to a reduction in the discharges of produced water and by extension the discharges of NORM. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Ireland is not aware of any such measures |
| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | This is not applicable to Ireland as there is negligible sand produced in the producing gas fields. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
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| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
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| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | This is not applicable to Ireland as there is negligible scale produced in the producing gas fields. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
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| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
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| **Questions**  | **Country: Norway** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | Norway has implemented the OSPAR Offshore industry strategy by the zero discharge policy first introduced in a white paper in 1997, where an overall goal is stated to be zero discharge of naturally occurring harmful substances in produced water, and if not possible the minimization of such discharges. Requirements regarding the use of BAT and BEP in relation to the handling, treatment and disposal of produced water has been implemented in national regulations. Reinjection of produced water is considered BAT, and the application of reinjection has been considered on all relevant installations on the Norwegian Continental shelf following the zero discharge work. The zero discharge goal also applies to NORM. Should reinjection not be available on a specific installation, then BAT to minimize the oil content in produced water discharged must be applied.Requirements on the use of a risk based approach relating to the management of produced water, has been implemented in national regulations. The current methodology in Norway includes oil, heavy metals and added chemicals, but not NORM. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | The application of reinjection will lead to a reduction in the discharge of NORM. It is assumed that the currently available techniques to minimize oil content in produced water does not affect the content, and thereby the discharge, of NORM. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | We are not aware of any measures to specifically reduce the discharge of NORM in produced water from offshore installations.A few years back, the operators were required by the NRPA to survey the market for technologies which could reduce the content of NORM in produced water on offshore installations during production. No such technologies were identified. The NRPA are currently planning further work on the subject. |
| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | Requirements in relation to maximum content of oil on sand discharged to sea has been implemented in national regulations. The requirements necessitate reinjection, onshore waste handling or measures to reduce oil content before discharge |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | The application of reinjection or onshore waste handling will lead to a reduction in the discharge of NORM. It is assumed that the currently available techniques to reduce oil content in sand does not affect the content, and thereby the discharge, of NORM. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | We are not aware of any measures to specifically reduce the discharge of NORM in produced sand from offshore installations. |
| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | Scale removed from process equipment by mechanical means is hazardous waste, and must be disposed as such. Depending on the activity and concentration of NORM in the scale, it is often also classified as radioactive waste. There are waste disposal routes for waste classified as both hazardous and radioactive waste in Norway. Scale that is removed onshore, either by water jet or by chemicals, is treated by licensed companies and disposed of in a repository. Some discharges of NORM are associated with the onshore removal of scale from process equipment and these discharges are reported to OSPAR.Scale removed from process equipment offshore by chemical means may be injected or discharged with produced water, in which case BAT is applied as described under (a). When scale dissolvers are for radioactive scale, but the discharge of radioactive material is then covered by the license for discharge of produced water, as the scale then will be dissolved in the produced water. It may also be treated as hazardous waste. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | The application of reinjection or onshore waste handling will lead to a reduction in the discharge of NORM. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | We are not aware of any measures to specifically reduce the discharge of NORM in scale from offshore installations. |

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| **Questions**  | **Country: United Kingdom** |
| **Question 1 - Produced Water** |

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| 1. How is BAT applied in relation to the handling, treatment and disposal of produced water containing oil, heavy metals, NORM and added chemicals?
 | The UK regulations require that all applications to discharge dispersed oil in produced water, which includes the associated chemicals and naturally occurring substances (including NORM), must apply BAT in regards to the treatment and disposal of the oil and produced water in accordance with the goals of OSPAR Offshore Industry Strategy and OSPAR Recommendation 2001/1. The point of departure for new installations is zero discharge however technical or cost considerations may limit the ability to reinject all or any produced water in which case discharges of oil should be minimised as much as possible. The most effective measure to reduce produced water discharges and associated NORM is through produced water reinjection (PWRI). However, PWRI will not be available for all offshore installations as it depends on a number of variables, including, the availability of a suitable subsurface formation, a dedicated disposal well to re-inject produced water and the necessary infrastructure on the installation (or space on the installation to retrofit with reinjection equipment) to re-inject produced water. However, there are currently no known treatment techniques that will selectively reduce discharge of NORM in produced water. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | Regarding topsides process the only practicable application of BAT to reduce the discharge of NORM is PWRI (notwithstanding the limitations outlined in a(i) above). For small quantities of produced water it may be possible to backload or export the produced water to onshore facilities for treatment but this is only likely to change the point of discharge or create another NORM waste problem onshore. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Other than as described above, no. |
| **Question 2 - Sand** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of produced sand removed from process vessels?
 | The discharge of oil on sand is controlled under the same regulations for the discharge of oil in produced water and the application of BAT in regards to the treatment and disposal of the aqueous phase is undertaken in accordance with the goals of OSPAR Offshore Industry Strategy and OSPAR Recommendation 2001/1. All applications to discharge oil on sand are required to describe the process for the discharge of sand and how concentrations of oil are minimised. Any reduction in the quantity of sand discharged will lead to a reduction in the levels of NORM discharged. Other alternatives include reinjection of sand or shipping sand to shore for disposal. As for reinjection, the limitations outlined in a(i) remains.  However, there are currently no known treatment techniques that will selectively reduce NORM concentrations in sand. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | If sand is reinjected into well annular spaces it will lead to a reduction in the discharge of NORM (notwithstanding the limitations outlined in a(i) above). Alternatively sand may be taken to shore for disposal, however this only changes the point of discharge or creates another NORM waste problem onshore. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Other than as described above, no. |
| **Question 3 - Scale** |
| 1. How is BAT applied in relation to the handling, treatment and disposal of scale removed from process equipment by mechanical or chemical means?
 | Scale typically removed during maintenance activity is treated to remove any hydrocarbon contamination and is macerated prior to discharge, reinjection or shipped to shore for disposal.Scale dissolved by chemical means may either be comingled with the process stream and treated with produced water as per (a) above or shipped to shore for disposal. Alternatively scale contaminated equipment is taken to shore for clean-up with the scale handled, treated and disposed onshore. |
| 1. Can the application of BAT also lead to a reduction in the discharge of NORM?
 | Reinjection of scale removed by mechanical means may be possible in a similar manner to sand reinjection (notwithstanding the limitations outlined in a(i) above). Liquid effluents generated from chemical treatment of scale could be reinjected via PWRI (notwithstanding the limitations outlined in a(i) above) if effluents are directed to process. However, there are currently no known treatment techniques that will selectively reduce NORM concentrations in scale. |
| 1. Are there measures that could be taken to specifically reduce the discharge of NORM?
 | Other than as described above, no. |

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**Background and purpose**

1. RSC 2020 discussed how to maintain the good cooperation between OIC and RSC, and further ease the dialogue between the two committees. A proposal was sent to OIC 2020, where it was positively received. The work of the two committees relate to the prevention of pollution resulting from discharges from the offshore oil and gas industry and the committees work influence the national regulation of the offshore oil and gas industry. It would therefore be beneficial to create a systematic route for dialogue between the two committees. To take this work forward RSC and OIC propose to establish an ICG-RSC/OIC under the Terms of Reference below.
2. RSC 2023 agreed to include additional areas of common interest contributing to several tasks under the NEAES 2030 operational objectives S3O1 on discharges of radioactive substances and S3O2 on environmental concentrations of radioactive substances.
3. The ICG met twice in 2023 and agreed that it was a useful forum to ensure the timely exchange of information between the two committees and that it should continue.
4. RSC 2024 agreed:
	1. That the oil and gas industry utilised BAT to reduce discharges of radioactive substances in produced water, based on the assessment of the information provided by the questionnaires carried out in 2019 and 2023;
	2. To compile available monitoring datasets on environmental concentrations around offshore installations;
	3. To further investigate the impact of leaving in-situ NORM contaminated oil and gas infrastructure such as pipelines; and
	4. To reconvene the ICG-RSC/OIC.

**Scope of work**

1. The ICG will provide a forum for dialogue between OIC and RSC in areas where the two committees have interests, such as discharges from the offshore oil and gas industry containing radioactive substances. The areas for common interest include, among others:
	1. discharge of produced water, produced sand etc.;
	2. results on the assessment of discharge data and on the monitoring / modelling of discharges of radioactive substances;
	3. results from the monitoring / modelling of the environmental concentrations of radioactive substances around offshore installations;
	4. specification of common indicator(s) for discharges and environmental concentrations from the non-nuclear sector;
	5. emerging data and research on the build-up of NORM activity in sediments in the vicinity of offshore platforms and the potential environmental impacts arising from presence of NORM and other hazardous materials in pipe scales and identification of further research needs (Science Agenda);
	6. possible implications of impact assessments for management decisions (e.g. leaving infrastructure in-situ)
	7. liaison with HERCA Working Group on Natural Radiation Sources on the application of BAT for NORM industries.

**Objective**

1. With regard to the scope of work, the ICG shall carry forward work on these issues and constitute a platform for the two committees to cooperate in relevant areas. The ICG will report to subsequent RSC and OIC meetings.

**Participants**

1. In accordance with OSPAR Rules of Procedure, the ICG will be opened to all Contracting Parties and Observers in both committees. The ICG will be convened by Carol Robinson (Norway). RSC experts from the UK and OIC experts from DK, NL, NO and UK have agreed to participate.

**Working procedure**

1. The ICG will work via correspondence and meet as needed.

**Timetable**

1. To be agreed at first meeting of ICG-RSC/OIC. The ICG is intended to be open for the forthcoming years, with active work whenever deemed necessary by the ICG, OIC or RSC.