



CAUSES, FACTS AND IMPACTS OF OIL SPILLS WEBINAR SUMMARY REPORT

2022

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INTRODUCTION

The Arafura and Timor Seas Action Phase II (ATSEA-2) was initiated in 2019. ATSEA-2 had completed a regional analysis of marine and land-based pollution hotspots in the ATS region. The study shows that the ATS Region is highly productive and rich in resources, but at the same time under the threats of oil spill due to expansive oil and gas exploitation, especially in the Timor Sea. The level of response and preparedness on oil spill shows significant gaps between countries, with Australia as the most progressive one compared to the other three countries (i.e. Indonesia, Papua New Guinea and Timor-Leste). Therefore, the study recommends ATS countries to work closely with regional organisations, one of them is Oil Spill Response Limited (OSRL), for national capacity building on oil spill preparedness and response (OSPR).

OSRL is an industry funded corporation, founded by major oil and energy and energy companies. It has expertise in building capacity to respond to oil spills and is capable of providing training and technical support in oil spill preparedness and response at regional, national and local levels and through drills and exercises. Furthermore, OSRL plays a significant role in the promotion of the use of industry good practices to prepare for and respond to any oil spill incidents, through engaging various key stakeholders which may be involved in an incident.

As the pursuits of both organizations converges, ATSEA-2 Regional Project Management Unit (RPMU) engaged OSRL to:

- Enable information sharing on OSPR to ATS stakeholders and ATSEA-2 project team by facilitating a series of technical webinars (quarterly).
- Facilitate a regional exchange on OSPR for selected disaster management local authorities and community representatives.
- Provide technical assistance for building local capacities on OSPR, especially in Rote Ndao District, Indonesia and Municipio Manatuto, Timor-Leste.

The quarterly technical webinars were designed by OSRL such that the topics built upon each other and customized relevant to ATS. The objectives for the webinars are as follows:

- Recognise gaps on OSPR in the overall region of ATS
- Establish a plan and take concrete steps to address the identified gaps.

This report provides a summary of the first of the four technical webinars delivered by OSRL on 24 February 2022.

WEBINAR PROGRAMME AND RESOURCE SPEAKERS

This webinar was held from 1:00 PM to 3:00 PM (Singapore time) on 24 February 2021.

The webinar was facilitated by Mr. Norman Lorica Ramos from OSRL. The webinar resource speakers and the topic they presented are as follow:

- Dr. Handoko Adi Susanto, M.Sc (ATSEA-2) – Introduction of ATSEA-2
- Mr. Yow Lih Hern (OSRL) – Causes and Fates of Marine Oil Spills
- Ms. Shahreena Shahnavas (OSRL) – Impacts of Marine Oil Spills

The webinar programme is presented below.

Duration	Agenda	Speaker
1300-1305 (5 minutes)	Welcome	Mr. Norman Lorica Ramos Principal Trainer and Consultant OSRL
1305-1310 (5 minutes)	Introduction of ATSEA-2	Dr. Handoko Adi Susanto, M. Sc Regional Project Manager ATSEA-2
1310-1315 (5 minutes)	Introduction of OSRL and Resource Speakers	Mr. Norman Lorica Ramos, OSRL
1315-1400 (45 minutes)	Causes and Fates of Marine Oil Spills	Mr. Yow Lih Hern Senior Consultant OSRL
1400-1445 (45 minutes)	Impacts of Marine Oil Spills	Ms. Shahreena Shahnavas Senior Consultant OSRL
1445-1457 (12 minutes)	Plenary	Mr. Norman Lorica Ramos, OSRL Mr. Yow Lih Hern, OSRL Ms. Shahreena Shahnavas, OSRL
1457-1500 (3 minutes)	Closing Remarks	Mr. Norman Lorica Ramos, OSRL

PARTICIPANTS

The webinar was attended by a total of 76 participants (not including the resource speakers from ATSEA-2 and OSRL). Fifty-three (53) participants out of the 76 participants completed the Attendance and Feedback Form. The webinar hosted diverse participants coming from Indonesia, Timor Leste, Papua New Guinea, Australia, Malaysia, Philippines, Uruguay and Nigeria.

Annex A presents the full list of participants

HIGHLIGHTS OF THE WEBINAR

WELCOME

Mr. Norman Lorica Ramos provided the Welcome Remarks to start off the webinar. The ground rules of the webinar and functionalities of the remote platform (Zoom) were also presented. Norman introduced Dr. Handoko Adi Susanto, M.Sc.

INTRODUCTION OF ATSEA-2

Dr. Susanto started the webinar by introducing ATSEA-2. In addition to providing the background information on ATSEA-2, he also talked about the rationale behind the technical sharing through webinars. One of the major issues that ATS faces is the land and marine based pollution more specifically on oil spill and marine litter.

The collaboration between ATSEA-2 and OSRL for webinars is to foster information sharing amongst and build capacity of ATS stakeholders on oil spill preparedness and response. To fully realize the information sharing, it was mentioned that the topics progressed from awareness of oil spill impacts to understanding oil spill risks and what it takes to respond to oil spills effectively.

He ended the session by encouraging the participants to support the webinars and extended his thanks to all the participants who attended the webinar.

INTRODUCTION OF OSRL AND RESOURCE SPEAKERS

Mr. Norman Lorica Ramos provided a brief introduction of OSRL. He introduced the resource speakers from OSRL.

- Mr. Yow Lih Hern – Senior Consultant from OSRL. He has been working in OSRL for 10 years. Lih Hern has responded to a number of oil spills notably in Singapore and Papua New Guinea. As a consultant, he has worked with preparedness projects with government agencies in addition to oil and gas companies. He also supports training projects specifically on Incident Management System and Crisis Management
- Ms. Shahreena Shahnavas – Senior Consultant from OSRL. She has extensive experience working with oil and gas companies on different aspects of preparedness. Shahreena has responded to a number of spills within Singapore as well. She has been working with OSRL for nine years.

CAUSES AND FATES OF MARINE OIL SPILLS

Mr. Yow Lih Hern talked about the major causes of marine oil spills for both exploration & production and shipping. Statistics were shown to provide a general sense on how these causes contribute to the overall cause of marine oil spills. Furthermore, he provided potential causes within the context of ATS.

The important properties of oil relevant in marine oil spills were introduced. Mr. Lih Hern emphasizes that relevance of the properties of oil in an oil spill incident:

- The properties of oil together with prevailing environmental conditions is one of the main factors on how oil weathers (fates) once spilled into the marine environment; and
- Selection of appropriate response strategies would also depend on oil properties.

He demonstrated how properties of oil would impact the weathering through the case study of Montara Crude. Another case study (MV Braer spill) was presented by Lih Hern to show how the oil properties correlate with the appropriate response strategies.

He finished his session by further associating the weathering of oil and how it will dictate the choice of response strategies.

IMPACTS OF MARINE OIL SPILLS

Ms. Shahreena Shahnavas discussed the impacts brought about by marine oil spills. The impacts were separated into two major categories – environmental and socioeconomic. ATS is recognized as both a productive marine ecosystem and a provider of socioeconomic benefits to the people utilizing its resources, thus viewing the impacts in two major categories. Moreover, Ms. Shahnavas correlates the fates of oil spilled in marine environments to the likely impact it will create.

Sensitivity map was introduced as a tool to convey information on sites of environmental and socioeconomic importance. This tool would assist in having holistic decision making for prioritizing important sites in a marine oil spill event. The Strategic Oil Spill Vulnerability Map of coastal areas of Rote Barat Daya was shown as an example of such a sensitivity map.

The session was ended to highlight the following key points:

- Recognizing marine oil spills have environmental and socioeconomic impacts;
- Importance of having an inventory of environmental and socioeconomic resources; and
- Exercising holistic decision making based on all resources that could be impacted by marine oil spill.

PLENARY

Annex B presents all questions raised by the participants and the responses provided by the resource speakers. The questions that were not raised during the webinar will be published in an online article to be authored by OSRL.

CLOSING REMARKS

Mr. Norman Lorica Ramos extended his gratitude to all the participants who attended the webinar. He reiterated to the participants that there are three more scheduled webinars in the coming months.

DEBRIEF

Debrief was conducted by ATSEA-2 RPMU and OSRL on 25 February 2022. The summary of discussion points are presented below.

Item	Topic	Observation	Resolution
1	Registration	<p>ATSEA raised the following issues experienced during registration:</p> <ul style="list-style-type: none"> • Some participants did not receive anything after registration thus making them unsure whether they have registered; • Some participants have to register twice before receiving notification from OSRL; and • Zoom link for the Webinar was not received by some participants 	<p>OSRL identified that the likely root cause of these observations were the unavailability of the Zoom link at the time the Webinar Registration Landing Page was published.</p> <p>From Q2 Webinar onwards, OSRL will ensure the Zoom link is available prior to the publishing of the Webinar Registration Landing Page to prevent these issues from recurring.</p>
2	Social Media Marketing	OSRL recognizes the efforts of Mr. Dwi Aryo Tjiptohandono of ATSEA-2 in social media marketing	OSRL will involve Mr. Dwi Aryo Tjiptohandono early in the social media marketing process from Q2 Webinar onwards. This is to ensure the coordination and synergy of social media marketing of ATSEA-2 and OSRL.
3	Technical Content of Webinar	ATSEA is pleased with the technical content of the Webinar materials as it was customized in the context of the ATS.	No action required
4	Audience	It was observed that there were a minimum number of participants from Timor Leste and Papua New Guinea.	ATSEA-2 to consider how to increase engagement with representatives from these countries.
5	Other Feedback	<p>1. ATSEA wonders how to increase the interaction between the participants and resource speakers. Two suggestions were made: a) Open the Chat to Everyone i.e., participants can chat with other participants; and b) Questions can be raised by the participants verbally.</p>	<p>1. OSRL agrees to open the Chat function to Everyone.</p> <p>OSRL mentioned that having the questions asked verbally by one participant would mean opening all the questions to all participants verbally. This could be done but in a limited manner.</p>

Item	Topic	Observation	Resolution
		<p>2. ATSEA recommended having resource speakers outside of OSRL e.g., resource speakers from Timor Leste and PNG to increase participation from the two countries. This could be implemented on Q3 and Q4 Webinars</p>	<p>2. OSRL agrees with this recommendation and will work with ATSEA-2 regarding this matter.</p>

ANNEX A: LIST OF PARTICIPANTS

Australia (AU)	Indonesia (IDN)	Indonesia (IDN)
<p>AES Ms. Tatiana Garnica</p> <p>Centre for International Maritime Convention Studies Mr. Solomon Chen</p> <p>Inchcape Shipping Services (Australia) Pty. Ltd. Mr. Seigmund Jacob Dollolasa</p>	<p>ATSEA-2 RPMU Ms. Deti Triani Ms. Casandra Tania</p> <p>Badan Keamanan Laut Mr. Dwi Santosa</p> <p>BBRSEKP Ms. Bayu Vita Yanti</p> <p>BPSPL Denpasar Mr. Permana Yudiarso</p> <p>BRPSDI-KKP Ms. Yayuk Sugianti</p> <p>Center for Fisheries Research Mr. Dwi Prasetyo Ms. Ria Faizah Ms. Yayan Hikmayani Ms. Isye Marda Samallo Ms. Setiya Triharyuni Ms. Husnah Samhudi Ms. Niken Winarsih</p> <p>Destructive Fishing Watch Indonesia Ms. Cindy Mudeng</p> <p>DKP Prov. NTT Dr. Deselina Keleka</p> <p>Indonesia Ocean Justice Initiative Mr. Imam Prakoso</p> <p>IPB University Ms. Eva Anggraini</p> <p>Medco E&P Indonesia Mr. Jana Kusuma</p>	<p>Leadership Indonesia Mr. Raden Bima Mr. Ganjar Pradana</p> <p>Marine and Fisheries Polytechnic of Kupang Mr. I Made Aditya Nugraha</p> <p>Ministry of Marine Affairs and Fisheries Mr. Hendra Yusran Siry Mr. Yuniato Yuniato Ms. Niken Gusmawati Ms. Melfa Marini Ms. Dini Purbani Ms. Dyan Fransiska Doko Ms. Regina Melianawati Ms. Herlina Ika Ratnawati Mr. Guntur Adhi Rahmawan Mr. Agus Dwiyanto</p> <p>PT Rekayasa Industry Mr. Rony Lesbata</p> <p>Pusat Riset Kelautan, BRSDMKP, KKP Mr. Hadiwijaya Lesmana Salim</p> <p>Research Institute for Coastal Resources and Vulnerability Mr. Ulung Jantama Wisha Mr. Wisnu Arya Gemilang</p> <p>Research Institute for Marine Fisheries Ms. Umi Chodrijah</p> <p>SPKKL Kupang Bakamla RI Ms. Yeanry Maryanthy Olang</p> <p>UNDP Mr. Dwi Ariyoga Gautama</p>

Malaysia (MAS)	Papua New Guinea (PNG)	Philippines (PHL)
ExxonMobil Exploration and Production Indonesia Mr. Mohamed Faizal Eusof Izzudin PIMMAG Mr. Mohd Fazrullah Innsan Mohd Fauzi VJ Engineering Solutions Sdn Bhd Mr. Hariharan Veraperumal Ms. Rosnah Mohamed Ismail	ATSEA-2 RPMU Mr. Kenneth Yhuanje	ATSEA-2 RPMU Ms. Cristine Ingrid Narcise Ms. Kathrine Rose Aguilong
Singapore (SGP)	Timor-Leste (TLS)	Nigeria (NGA)
Borthwick-Associates Mr. Ian Borthwick	UNDP Mr. Almerindo Oliveira Silva	Renaissance Environmental Limited Mr. Mohammed Engha Isah
Uruguay (UY)		
Biotek Petrol SRL Mr. Alvaro Diaz		

ANNEX B: RESPONSE TO QUESTIONS IN WEBINAR

No.	Question	Response
1	Most oil spill properties relate to physical properties, how about the chemical specially the volatile which can cause sudden kill of aquatic organisms?	<p>Physical properties are the main consideration as these relate to the approach on recovering oil from the marine environment. That is not to say that chemical properties are not looked at. Chemical properties have more relevance in terms of impacts on the environment.</p> <p>OSRL had participated in a spill before where a container ship spills both oil and chemical (phosphine gas from MV Chitra collision). Oil spill response was conducted separately from the chemical spill response. Oil spill response only commenced after the threat of the chemical spill has been contained. It should be noted that the main priority is the safety of responders thus the sequence of response.</p> <p>Furthermore, a more specialized expertise is needed in responding to chemical spills.</p>
2	This evaporation could cause explosion?	<p>Yes, evaporation could likely lead to an explosion This is a situation where flammable vapours are present and accumulates to a certain extent and goes beyond the LEL (Lower Explosive Limit) then this becomes dangerous and could result in explosion.</p> <p>We do not want this to happen. The priority is always the safety of the responders. When we know that the oil is volatile then we ensure that the atmosphere is safe prior to the entry of responders.</p> <p>Another concern is the public health, it might be prudent to evacuate anyone who are near or in the immediate vicinity of the volatile compounds.</p>
3	How many days the fresh spilled oils need to be emulsified on the ocean surface?	<p>This is dependent on a number of factors. It depends on the weather condition, if the sea condition is rough likely the emulsification could be much faster. This also depends on the oil itself, if the oil has high asphaltene content the emulsification is likely to happen at a much faster rate.</p>

No.	Question	Response
		<p>For the case of Montara Crude, emulsification is quite fast which happens within days if not hours. Based on experience, there were cases where oil spilled in the marine environment took a week or so to emulsify.</p> <p>We call the timeframe for the oil to emulsify as the “window of opportunity” for responders to utilize wider response options including use of dispersants.</p>
4	<p>One of the causes of oil spill that has not adequate attention and it is the major cause of oil spill especially in the developing countries e.g., Nigeria is third party or vandalism. We need to investigate this extensively. We need to study and understand the psychology of vandals. What pushes someone to break an oil pipeline and steal oil despite the inherent danger of explosion and fire. We need to know the sociology of this problem.</p>	<p>Comment from the participant from Nigeria.</p>
5	<p>If the oil spilled has different types of properties and has a wide range of properties, how would you usually approach this kind of situation?</p>	<p>For a mixture of hydrocarbons, there will be two general approaches depending on availability of resources and facilities.</p> <ol style="list-style-type: none"> I. To be used when quick information is required and no resources available. Use the properties of hydrocarbons that have the largest proportion in the spilled oil. The spilled oil is more likely to behave similar to the hydrocarbon with the largest proportion. II. Requires time and testing facility. Collect a representative sample of the spilled oil and conduct quick analysis to obtain relevant properties. <p>Both approaches could be conducted concurrently to provide a better estimation on behaviour of spilled oil.</p> <p>Lastly, take note that both approaches are theoretical in nature as always, a physical surveillance should be conducted to confirm the fates and behaviours of spilled oil match what has been expected.</p>

No.	Question	Response
6	It is said that the dispersant is more toxic than the oil itself, however the dispersant application is one of the important mitigation in oil spills accidents. What is your opinion about this?	<p>This is an interesting question as it states that the dispersant is more toxic than oil. The Good Practice Guides developed by IPIECA indicated that the components of dispersants can also be found in other daily consumer products.</p> <p>Use of dispersants depends on various stakeholders in the country where you are operating. For example, there is reluctance in using dispersants in countries which have strong fishing communities because the priority is the fishing industry. Another example is Singapore, the main revenue comes from the shipping industry thus the main response strategy is use of dispersants. Dispersants are found to be the most efficient way and less disruptions in clearing up the shipping lanes.</p> <p>In summary, use of dispersants comes down to having a good stakeholder engagement. The concept of Net Environmental Benefit Analysis (NEBA) provides structure in weighing the advantages and disadvantages of a particular response strategy to the impact created by the marine oil spill to the economy and the environment.</p>
7	Would like to know what type of skimmer is suitable for thicker / emulsified oil and what type of skimmer is suitable for light oil?	<p>For thick / emulsified oil, a mechanical skimmer which can ‘physically grab’ oil from the water surface will work. Weir skimmer is also suitable. Some active boom systems which have trawl nets will also work in this situation.</p> <p>For light oil, oleophilic skimmer is recommended for its high oil-to-water recovery efficiency. One major consideration is safety hazards when dealing with light oil. Gas monitoring should be conducted and ensure the environment is safe for the responders.</p>
8	Regarding dispersant, would spreading also be a decision point since (i) it shows the oil would be amenable to dispersant and (ii) as the oil spreads it becomes much more difficult for contain and recover, thus dispersant response is more effective	Yes, spreading is one of the indications that oil is amenable to dispersant, but it has to be used carefully. This is because spreading also has negative impacts towards decision making on dispersant spraying. If the spilled oil spreads rapidly and forms only oily sheen, dispersant application will not be effective as the oil layer is too thin.

No.	Question	Response
		<p>The most ideal preparation is to conduct laboratory testing to determine which type of dispersant is effective towards most of the oil handled, which also allows stockpiling of the relevant dispersant type.</p> <p>The other method will be to conduct test spray prior to actual large scale dispersant application operation.</p>
9	At what level of viscosity is considered suitable for mechanical recovery option	There is no one recovery method / skimmer that is suitable to recover oil throughout its entire weathering process. However, it should be noted that the effectiveness of mechanical recovery options (mechanical skimmers) increases as the viscosity increases. Normally, for oil with viscosity above 7000 centistokes (cSt), a mechanical skimmer is probably the most efficient skimmer for recovery.
10	Which one of the oil spill events is most worrying, whether in the water area or in the coastal area (particularly that hit mangrove area)?	This depends on the situation of the oil spill incident. Though, oil spill impacting coastal areas with mangroves cause a lot of concern. Mangroves are considered the most sensitive shoreline based on ESI (Environmental Sensitivity Index). There is not a lot of response that could be done once mangroves are affected. Thus, mangroves need to be prioritized and protected to minimize the impact of the oil spill to such coastal area.
11	What about impacts for terrestrial fauna when the shoreline is affected? What might be affected surrounding mangroves and other habitats, such as frogs, terrestrial mammals?	<p>When we develop plans we refer to Environmental Impact Assessments. Such reports / assessments are very useful because they provide all the relevant information required and include information on terrestrial fauna as well.</p> <p>This information could go into the sensitivity map. Preparedness activities could be planned effectively given all these information.</p>



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