

Spill Response During the COVID-19 Pandemic

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Abstract:

The COVID-19 pandemic brought colossal challenges and novel issues for countries around the world. Amidst the chaos brought to global economies, restrictions to travel and limitations on personal freedom, the shipping industry has continued to keep global trade afloat. With the shipping industry continuing to operate, the threat of environmental damage from an accidental pollution incident remained. Responding to a spill under COVID-19 conditions has brought unparalleled challenges in all aspects of launching an effective spill response. Over the course of the pandemic to date, two incidents have dominated media attention and triggered significant responses – WAKASHIO in southeast Mauritius and X-PRESS PEARL in Colombo, Sri Lanka. Both of these incidents took place in Indian Ocean island states but were very different incidents in terms of the nature of the spills and the COVID-19 restrictions placed on the responders. Every aspect of spill response was affected; from mobilizing international equipment and personnel to limitations placed on the clean-up teams on the shoreline. Each country presented the responder with a new set of ever-changing rules to be navigated to effectively clean-up the spillage while ensuring the safety of response personnel. This paper discusses the experiences and issues from a personal perspective that were faced in these, and other smaller incidents, and what lessons were learned that can be applied going forwards during the COVID-19 pandemic, or indeed, for any future pandemics.

Spill Response During the COVID-19 Pandemic

It cannot be understated the extent to which COVID-19 has brought about immense challenges and caused severe disruption around the world. Every aspect of modern life has been affected, not least the ability to travel freely between nations. Global trade has continued despite these challenges and the shipping industry is central for this to function effectively. Given the continued trade of the shipping industry during the COVID-19 pandemic, the risks of vessel-related incidents occurring did not diminish, and are still required to be addressed, despite the restrictions of the pandemic.

Responding to a spill under COVID-19 conditions has brought unique challenges in all aspects of launching an effective spill response. Spill response can be complicated at the best of times, but with the added limitations of pandemic restrictions, a new dimension of complexity is added.

Over the course of the pandemic to date, two high-profile incidents have dominated media attention and triggered significant responses – WAKASHIO in southeast Mauritius and X-PRESS PEARL in Colombo,

Sri Lanka. Both of these incidents took place in Indian Ocean island states but were very different incidents in terms of the nature of the spills and the COVID-19 restrictions placed on the responders. Other spills and incidents too have brought an array of challenges worthy of mention and in general, the pandemic has challenged our way of thinking about spill response.



Figure 1. Facemasks became ubiquitous amongst shoreline waste over the course of the pandemic.

The STELLAR BANNER incident in northeast Brazil in February 2020 was the first incident where ITOPF was impacted by COVID-19. A major spill was avoided during this incident and whilst the virus had not yet become global, the fear of the virus was gathering momentum. Additionally, due to the lack of travel restrictions, stakeholders in the incident from countries with a high COVID-19 rate at the time were allowed to travel to Brazil. No social distancing measures or facemask requirements were in place in the command centre or in meetings, which caused unease within the response. The rush to repatriate residents across the world and the rapid introduction of severe travel restrictions in many South American countries meant that ITOPF staff had to leave Brazil earlier than planned and arranging such a flight was difficult given the huge volumes of people trying to leave the country to return home. This was the first novel challenge presented by COVID-19 to ITOPF technical responders and it set the stage for future ITOPF deployments under the pandemic.

Remote Assistance and the Use of Virtual Platforms

A large feature of spill response during the pandemic has been remote assistance and virtual meetings. Some spills have been overseen entirely remotely whereas some have used a hybrid model where fieldwork is in person but meetings are held virtually.

With the element of urgency in emergency spill response, it is in these circumstances that the frustrations of remote video conferencing platforms can become magnified and messages may not be delivered clearly. Spill sites in more remote regions may experience issues with phone signal or poor internet strength that may mean time is wasted repeating oneself or trying to achieve a better signal. It may also be that those on the call are distracted by what is happening on site or by a room full of activity and bustle as is typical of a spill response command centre. During the WAKASHIO incident, before ITOPF was able to attend on-site, phone calls were attempted to deliver key advice with stakeholders while they were on site. The calls were often taken from the back of 4x4s, on a boat or from a busy command centre and it was often difficult to communicate effectively.

ITOPF has always considered that on-site delivery of technical advice and assistance during incidents is the most effective. However, there have been many cases during the pandemic where ITOPF has had to deliver technical advice and assistance remotely for the duration of the spill mostly due to travel restrictions. During the POWERBARGE 102 incident in July 2020, a spill of approximately 250 m³ heavy fuel oil near Iloilo in the Philippines, the response was monitored remotely and advice was delivered to key stakeholders via email and video conferencing. Issues were encountered with unstable internet connections and difficult video calls. During a spill involving multiple cultures, the language barriers can often be a challenge, in particular with the range of accents and different levels of English being spoken between all stakeholders. The POWERBARGE 102 incident highlighted how this can be exacerbated when using video conferencing. The miscommunication over video calls highlights the importance of body language, hand movements and other non-verbal means of interacting that are lost through teleconferencing but are so key to effective communication.

Similar issues were experienced during the A SYMPHONY case in China in April 2021. Despite this spill being the largest recorded by ITOPF in 2021 with an estimated 9,500 m³ of heavy oil being spilled, all foreign involvement was carried out remotely and a lot of the initial assessment was done using remote sensing. It was clear from satellite imagery that this spill was a significant large case that in normal times would have merited the deployment of international assets. Significant time and effort was expended in attempting to circumvent the travel restrictions, but to no avail. Overall, it is very difficult to understand the impact this might have had on the duration and efficiency of the response.

One of the main frustrations with remote assistance for incidents is the inability to truly make a connection with individuals without face-to-face interaction. A presentation over a video call or a description of a technique or concept does not have the impact in comparison to physically presenting in a command centre in front of stakeholders. As much as emails are useful for sending information and communicating, if that is the primary means of interaction then many of the key messages could potentially be lost. It is also difficult to adequately convey the sense of urgency through an email,

however strongly worded. In the heat of a spill or incident, it is more likely that links are not clicked on and attachments are not opened, despite how important or relevant they may be. In addition, the sheer quantity of emails received by any given stakeholder during the spill response can be detrimental to sharing and receiving key messages.

On a positive note, video calls while on site can be highly useful as personnel do not need to travel to every meeting location – which can be very time consuming. They can also be helpful for learning individuals names and affiliations, as these are clearly displayed below their video window, in contrast to a room full of new faces during meetings. This can be highly useful in a complex multi-stakeholder scenario.

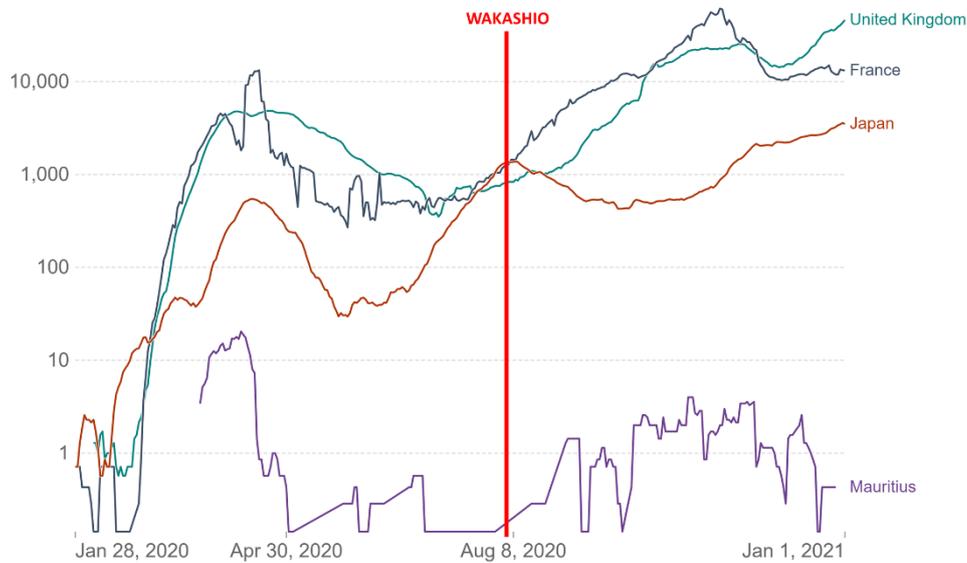
Travel Challenges

The WAKASHIO spill occurred in early August 2020, following the grounding of capesize bulk carrier WAKASHIO on a reef in southeast Mauritius. A spill of significant size, in an area of sensitivity relating to biodiversity, key habitats and also tourism, it attracted a great deal of international attention. At the time, Mauritius had followed a strict closed-border policy, even to returning citizens, that had successfully kept COVID-19 out of the country. The need for an influx of international personnel to tackle the salvage of the vessel and the clean-up presented a challenge to Mauritian authorities and an exemption to these restrictions was made.

The fact that no commercial flights were permitted into the country meant that many stakeholders were flown by private plane from the nearby French island of La Réunion, having flown from Paris. Upon landing at the closed Mauritian International Airport, a 10 minute drive from the affected shorelines, personnel were greeted by a minibus of Tyvek-clad health officials, immediately provided with full-body PPE, had to undertake a PCR test and were ferried to their accommodation by police-escorted minibus.

Daily new confirmed COVID-19 cases

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.



Source: Johns Hopkins University CSSE COVID-19 Data

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Figure 2. COVID-19 cases of key stakeholder countries involved in the WAKASHIO incident. Note: logarithmic scale.

Travelling can often be stressful and spill-responders will be well aware of this, but the threat of COVID-19 adds a veneer of anxiety to the already weary traveller. Spending 48 hours in a mask without a break. Constant hand sanitizing and hand-washing. Hearing someone coughing on the other side of the plane. Ensuring you have the correct paperwork. The queuing and socially-distanced seating. The one-way systems. Trying not to sneeze in public. Standing shoulder-to-shoulder with unmasked individuals in the unventilated transfer bus. Being told that your flight does not exist. Last minute PCR test results. Standing amongst Tyvek-suited, goggle-wearing, double-masked, face-shielded throngs of individuals with taped gloves waiting to board a plane to Beijing. Factors like these add to a thoroughly challenging experience that lends itself well to mental exhaustion and physical fatigue.

While travelling abroad, all of these COVID-19 considerations come with the overarching fear that you will test positive upon arrival at your hotel. Depending on the jurisdiction one finds oneself in, you may well end up in a severely unpleasant and frightening situation completely out of your control. You may find yourself ferried by Tyvek-suited government officials to a quarantine facility where you may be kept indefinitely without being informed of what might happen next. It does not bear thinking about what might happen if you genuinely develop COVID-19 symptoms and begin to feel unwell or if you need urgent hospital attention. It is prudent to have a clear understanding of your health and travel insurance and how medical evacuations would be handled before travelling, should the worst happen. There have also been some positive side effects for when travelling under COVID-19. In general, airports and planes have been much less busy and one has spent less time queuing and it is fairly easy to find a

socially distanced seat. The extra space on most flights is appreciated and makes for a generally more comfortable flight. Also, when on site, as responders, there are often occasions that necessitate using a lavatory which may not have the level of hygiene that may be expected at home but one is never without hand-sanitizing gel during the pandemic.



Figure 3. A - Heavy PPE requirements upon arrival in Mauritius. B - Extreme PPE while waiting to board a flight to Beijing. C - Uncomfortable PCR tests became commonplace over the course of the pandemic. D - PPE requirements and alternative flight arrangements had to be considered for responders.

The X-PRESS PEARL incident in May 2021 involved mounting a shoreline response in a country during a strict lock-down. The incident involved a major fire and explosion on a containership which caused large volumes of plastic pellets ‘nurdles’ to strand in large quantities on the shorelines north of Colombo. At this time, after a year and a half into the pandemic, Sri Lanka was experiencing rapidly rising case numbers that had triggered a strict nationwide lockdown. Entering the country was difficult, with special permission required for any personnel entering the country and no commercial flights until 2nd June, although the incident occurred on 22nd May.

Daily new confirmed COVID-19 cases

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.



Source: Johns Hopkins University CSSE COVID-19 Data

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Figure 4. COVID-19 cases of key stakeholder countries involved in the X-PRESS PEARL incident. Note: logarithmic scale.

As time progressed during the WAKASHIO incident, there was also a requirement to have an increased number of PCR tests in order to leave quarantine. PCR tests can often be uncomfortable and it is always advisable to do your own test to avoid health staff delving “too deep” into your nasal cavity. A key lesson is that PCR requirements and protocols should always be researched in advance of travel so that expectations are managed and the traveller is prepared.



Figure 5. A - Outdoor meetings are a good way to minimise the likely spread of COVID-19. B - Fieldwork in Tyvek suits can be uncomfortable in tropical heat. C, D - Boat surveys had to be conducted in masks and Tyvek suits, despite the unlikelihood of COVID-19 spreading.

Quarantine Restrictions

During the initial emergency phase of the WAKASHIO incident, the quarantine period was for as long as it took for PCR test results to come back but later it changed to a compulsory week of isolation irrespective of negative test results. Understandably, given the unprecedented and emergency nature of the situation, and much like many other quarantine hotels around the world, guests' movements were severely restricted with rapidly changing rules that were often not communicated clearly. The balcony door was even locked to prevent guests escaping, which of course presented a fire safety risk. The lack of clarity for all therefore resulted in numerous questions for employers relating to staff welfare, length of deployment, insurance and the cost of compulsory quarantine. Adaptability and resilience were required by both individuals and response organisations.



Figure 6. A - Late-night cleaning in a COVID-positive ward in Mauritius. B - Hospital quarantine for a minor dentist visit in Sri Lanka. C - Hotel rooms often had to be cleaned by the occupants themselves. D - Mauritian quarantine hotel food parcels.

Later in the WAKASHIO response, after the emergency phase had passed, a need to quarantine for a 14-day period became necessary, which meant that extended periods were spent waiting in hotels. This emphasizes the requirement for prior planning pre-departure and alignment of expectations between organisations, governments, employees and employers. These new rules were often brought in with no forewarning; on one occasion ITOPF staff only learned of new strict quarantine rules after the plane had landed, the rules having changed mid-air. The location of the quarantine hotels was also not negotiable and this often resulted in long travel times to the spill site and significantly increased the lengths of one's working day and reduced the time available for sleep.

Quarantine requirements for those responding to the X-PRESS PEARL spill were relatively relaxed, requiring only 24 hours in a hotel room until a negative PCR test result was received. There were occasions, however, where members of the response team tested positive for COVID-19 which resulted in the entire team, or those who had had direct contact being subject to 10-day in-room quarantine without access to fresh air. Of course with this quarantine comes some disruption to the clean-up on the shorelines and often large swathes of the clean-up workforce were forced to stop, resulting in the shorelines not being cleaned for approximately three weeks. As this case was primarily a nurdle spill, it

was urgent to maintain a presence on the shoreline as the nurdles remobilized rapidly if left uncollected.

In terms of other additional strains on responders was the need to do a managed hotel quarantine when arriving back in the UK if returning from a red-list country such as Sri Lanka at that time. After an extended time on site with a range of limitations and restrictions, perhaps with quarantine already served in a Sri Lankan hotel, responders were required to spend 10 full days in an airport hotel. This expensive hotel quarantine consisted of poor-quality food, small rooms, a daily allowance of 20 minutes of exercise in the hotel underground car park and other negative factors. You had no choice of hotel and some were more pleasant than others. One way of avoiding this quarantine was by spending 10 days in an intermediary 'amber' country before entry to the UK which meant that the experience and cost of a UK hotel quarantine could be bypassed.

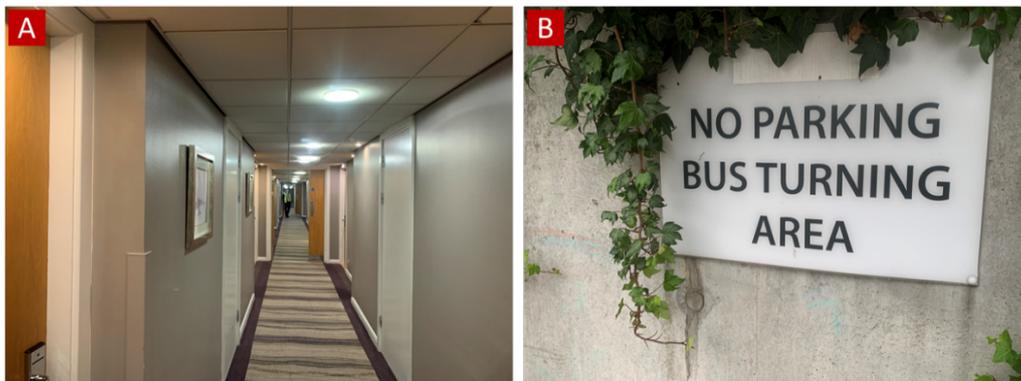


Figure 7. A - A quarantine hotel welcome home. B - The daily 20 minute exercise area.

The rules for different countries also changed rapidly and unexpectedly and often response staff were not informed of why there were sudden changes to planned activities. The effect of these unexpected events and changes is that key decisions were not made in a timely manner or key information-sharing between stakeholders was not effectively facilitated.

On-site COVID-19 Response Measures

The KAAMI incident in Scotland occurred in March 2020 as the pandemic in the UK was beginning and the behaviour of the virus was as yet relatively unknown. It was a minor incident with only a small spill but it nevertheless required the presence of a command centre on a Scottish island, in an area with scarce healthcare provisions and a significant elderly population. As a positive example of command and control good practice, a dedicated hotel was rented for the salvage team and others to create an isolation bubble, separated from the local community. Food was left at the hotel for preparation and large quantities of hand sanitizer made in the local distillery were delivered. The unknown nature of the virus at this stage meant that there was uncertainty surrounding the precautions required and at this

stage mask-wearing was not commonplace. Many of the key stakeholders were not physically present on site and all of the daily meetings outside the salvage bubble were done via Skype. In this particular case, the spill was minor and the salvage operation was able to be completed effectively, despite the restrictions placed on the team.

The GOLDEN RAY incident, in Georgia, USA, continued throughout the pandemic. On-site attendance required quarantine periods and extended deployments of personnel, two aspects that could negatively affect the mental well-being of individuals in an already stressful circumstance. ITOPF staff spent long periods in quarantine for this spill and due to a strict bubble structure, the interaction with other stakeholders was somewhat limited. Key stakeholders created three tiers of 'bubbles', whereby essential salvage personnel were separated from those doing boat-work or clean-up who again were largely separate from those in the command centre. When deployed to a spill site, there are already strains on one's mind from being away from home and family and the additional layer of isolation does nothing to improve these factors. It is often the case that, once the emergency phase has passed, it is possible to get to know other responders socially in shared accommodation and with shared meals. On this response, socialising was severely restricted which could lead to the feeling of loneliness. On a professional level also, introductions become more awkward when handshakes are not permitted and there is often no consensus on what greeting is to be used with a mixture of a wave, bowing, a fist pump or an elbow bump causing some confusion. The US common-sense approach however facilitated a good response to an incident and the tiered bubble structure reassured responders that the chance of catching COVID-19 was low. It has been noted that the quarantine facilities were more than adequate for the response personnel and that being able to mix within bubbles was good for mental well-being.

During the X-PRESS PEARL incident, entry to the country came on the condition that responders were placed in a 'bio bubble' – a concept where responders had their own group of drivers that they lived with on a specific floor of a hotel without any outside contact. The 'bio-bubble' also required plastic sheets between driver and passenger and strict PPE protocols. Often this caused frustrations when 'normal' requirements like lunch provision or using the bathroom became problematic.

A nurdle incident in South Africa in the Autumn of 2020 was ongoing just before the new 'Beta' variant of the coronavirus was beginning to take hold. South Africa at the time had minimal travel restrictions and there was no lockdown in place. A lot of the work on a nurdle incident is surveying vast tracts of shoreline which of course can be done easily with social distancing in the open air. During the response, one particular event involving close-contact highlighted a key risk to responders. In a helicopter, an inherently close-quarters environment, one of the individuals on the flight was carrying COVID-19

unknown to key response staff who were undertaking the overflight to search for a lost container and lost nurdle bags. After the flight and the resulting positive test, everyone on the flight had to quarantine in a hotel in-country for 10 days, despite repeated negative PCR test results. This highlights the risks involved in aerial surveillance, a key aspect of the response, where many individuals are enclosed in a small space for extended periods. If possible of course, good ventilation of the aircraft would somewhat reduce this risk but, in general, it remains a risky activity and it would be prudent for everyone to do a rapid-flow test before boarding. This precaution could also be appropriate for other close-contact activities such as car journeys, meetings or dinners.

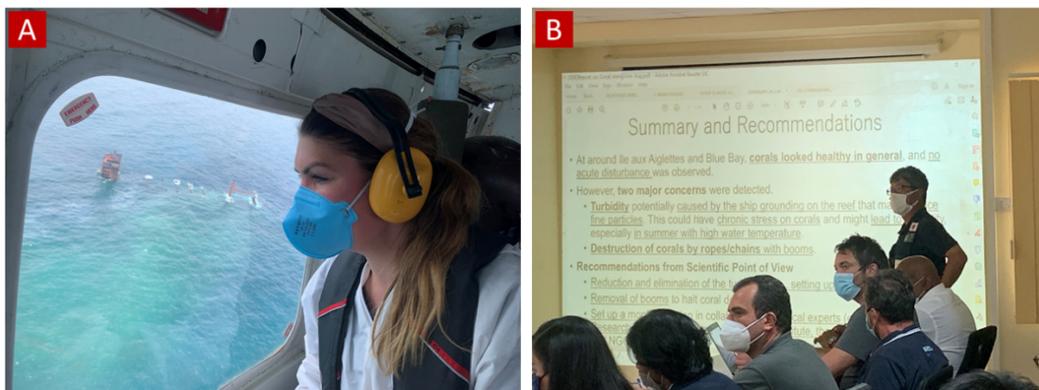


Figure 8. A - The confinement of aerial surveillance poses a risk of COVID-19 spreading between responders. B - Meetings had to be conducted socially distanced and wearing masks.

During the WAKASHIO incident, health officials were assigned to responders and tasked with following them around and ensuring they did not go into local shops or associate with local people and that they wore their masks. Challenges were encountered throughout the response when health escorts were instructed to follow responders on the shoreline and during boat surveys which meant they had to adjust their working hours to the often unfavourable working hours of a spill responder. It was also difficult to provide them with the required set timetable each day as the emergency phase of an incident is a dynamic and responsive environment and knowing where you may be in the next couple of hours is not always possible. However, on the whole, international responders were able to safely conduct their work and abide by Mauritian protocols.

During the X-PRESS PEARL incident it was also mandatory to have navy escorts to ensure responders abided by the COVID-19 rules. As each individual required their own driver, each site visit involved a convoy of up to seven vehicles for all the escorts, which highlighted a waste of resources. Of course, in the rapidly evolving circumstances of an incident, these logistical constraints were highly limiting.

Often a key limitation on site during the pandemic is the restriction on movement between regions. During the POWERBARGE 102 incident, other difficulties were encountered by surveyors and fisheries experts who needed to cross between different provinces to perform their roles. Often access was not permitted and the surveyors had to wait for special dispensation, which often delayed the progress of the spill assessment. One key site that was affected was the island of Guimaras and, as an island, it was particularly hard to get permission to visit despite the island being heavily impacted by oil and in desperate need of relief for affected fishermen.

During both the WAKASHIO and X-PRESS PEARL incidents, the wearing of a full suite of PPE was insisted upon in the early days of the incident, but in the tropical heat of Sri Lanka or Mauritius, these rules were relaxed fairly soon after arrival. Under the pressured circumstances of a spill, the need to wear a full Tyvek suit and a mask and face-shield adds an extra level of discomfort. Conducting shoreline surveys in 37°C heat in Tyvek suits is an extremely unpleasant and potentially unsafe experience for responders. In Sri Lanka, the government rule was that one should wear a mask continually while outside ones private dwelling and it was observed that even fishermen alone in boats, farmers tending their fields and net-menders on isolated stretches of beach were wearing masks. Often, masks had to be worn by responders in situations where they may not have been required at home or where the risks of contracting COVID-19 were low.

Increased Response Costs and Resources during the Pandemic

It must be noted that to mount a response during the pandemic incurs extra logistics and costly arrangements that must be factored into the total bill for the response. Across all the spills during the past two years, it has been observed that there was an increase in resources used for the response in order to facilitate a COVID-19-safe working environment. To allow for social distancing, everyone involved had to have their own car and often entire hotels had to be rented out for the sake of a small team of response personnel. The need for constant PCR tests, health escorts and the supervision of quarantine facilities also required more personnel. During the GOLDEN RAY incident for example, there were upwards of 250 employed for the operation and a small team of medical workers were employed in support of that workforce.

Significant costs were typically charged for stays in quarantine hotels and the service and food quality was poorer than during non-pandemic conditions.

The quarantine hotels required on returning home also needed to be factored into the consideration of wasted resources, escalating costs and impact to mental wellbeing of responders. In ITOPF's experience, from a waste generation and an environmental perspective, hotel catering resulted in large

amounts of single use plastics to deliver and store individually packed meals to individuals in a similar fashion to the increased requirements for PPE.

Conclusions

Overall, despite the many negatives, it has been something of a privilege to be travelling internationally during this exceptional time. It should be counted as fortunate that, in most cases, spill responders are given special dispensation to access closed countries and travel when required. It is truly a remarkable time in history and to be able to witness the lengths that each country goes to protect their citizens and how businesses have adapted and altered practices has been illuminating. It has certainly given reason to consider the freedoms that one is normally afforded and not take for granted the relatively unlimited access we have as responders around the world.

It is certainly the case, however, that COVID-19 has caused untold delays to crucial response actions that could have mitigated damage to the environment, both in the initial emergency response phase but also later during the project phase of the clean-up operation. It is unclear currently what the future holds in terms of new COVID-19 strains and threats and, on a longer scale, it is also pertinent to consider the threat from future pandemics.

It may be that the considerations given in this paper to the various aspects of responding under the pandemic are irrelevant in a couple of years, but should a new threat arise countries are better equipped with an array of measures to reduce the spread of any virus. We, as responders, also have some ideas of what to expect and how a pandemic can have an impact on not only the response, but also on ourselves.