OIL SPILL CONTINGENCY PLANS: INCORPORATING WASTE MANAGEMENT AND FURTHERING ITS PROMOTION [1]

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ABSTRACT

A fundamental problem exists with waste disposal in marine-based oil spill clean up, as up to ten times more waste can be generated than the actual oil spilled. Lessons learnt are rarely recognised until the clean up operation has finished and oiled waste has accumulated. In 1999 the oil tanker Erika broke in two and sank off the coast of Brittany, France. Spilling 20,000 tonnes of Heavy Fuel Oil but creating 250,000 tonnes of oiled waste.

The Author, during the Prestige spill has observed first hand how the handling and disposal of oily waste can have major implications for oil clean up operations. It can hinder the entire operation by causing bottlenecks and delays in further recovery of oil, unless suitable arrangements can be made. The promotion of a holistic approach to waste management is fundamental to effective oil recovery operations and should be incorporated into oil spill contingency plans.

The paper will highlight the importance of developing a proactive waste management strategy, emphasising good practice and the key issues involved. The paper is supported by existing reports, the author's practical experience and a published document, co-authored, on current waste disposal options for IPIECA's technical document series.

DISCUSSION

This paper has been prepared as a continuation of a paper written by the author in 2004 (*SPE HSE 2004*), that covered the very same and debatable subject of waste management following a maritime oil spill. The issue of waste management was previously investigated; using the author's own experiences in a variety spill incidents as examples highlighting the severity of the problem. The paper concluded that there is an abundance of advice and best practise for combating the issue of waste management and consequently an abundance of legal issues, where there is no one legal umbrella specifically covering the management of oiled waste from spill clean up. But even with the current laws and legislation set in place in the developed world there is evidence that suggest they are simply insufficient or not adhered too. Waste management should be considered as part of holistic approach to response operations and planning.

Oil Spill response operations will generate several different types of waste. Key considerations are the types, characteristics, and quantities of waste, although it should be noted these factors are largely dependent on the specific cleanup methods employed, that may change as the work progresses.

Past oil spill case studies have highlighted the problem incurred due to the lack of an existing waste management plan or the implementations of such a plan from the very beginning of oil clean up operation.

At the earliest stage, a waste management plan should be mapped out and implemented to prevent serious economic and environmental damage to the affected area. This is difficult to achieve successfully in the highly charged, stressed atmosphere of the spill control centre. There are steps the industry can take to combat this promulgation.

The steps that the oil industry and governments alike should take to move the management of oil spill waste forward in the absence of legislation must be understood, whilst looking at the need for the understanding of waste management and good supervision from trained personnel.

What Is A Waste Management Plan?

In the aftermath of a spill, deciding how to deal with the waste oil and contaminated material is critical and very complex. At the earliest stage a waste management plan should be mapped out and implemented to prevent serious economic and environmental damage to the affected area. As mentioned this is difficult to achieve successfully in the highly charged, stressed atmosphere of the spill control centre. To overcome this, a waste management plan should be drawn up during the contingency planning stage when there is time to consider all options.

Intensive research must be carried out locally and regionally and governmental approval must be attained with a comprehensive review of the local and national law, to establish the best solutions for segregation and transportation of waste, intermediate and long term storage and the final disposal options. These key points can then be instantly actioned during a crisis through the activation of a contingency plan. This will clarify all activities and ensures a comprehensive understanding of all issues of the waste stream.

To highlight the problem one can look at the previous spills the world has witnessed in the last two decades. The author has attended a few of these spills in the last couple of years that are

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detailed in the prescript to this paper. There are common themes that emerge from this investigation, the major theme being that waste management should be supported and the same lessons are always present but not learnt.

Lessons Learnt

Lessons are always learnt and recommendations made to lessen the impact of an incident if it where to happen again. But in the case of major marine oil spills the lesson of waste management are learnt after the spill. History has ascertained that recommendations have not been made in preparation for another incident and if they have they are not adhered to.

A common thyme for mistakes made in the clean up operation with regard collected waste are observed as the following:

- Lack of understanding of the different types of waste that maybe generated along that particular stretch of coast or through offshore recovery;
- Failure to understand the importance of the need to segregate each different waste types at source;
- Leaking, substandard containers leading to secondary contamination;
- Poor choice of site based on geographical, geological and hydrological factors for installing intermediate storage;
- Non continuation of waste separation to each stage in the waste cycle;
- Lack of management leading to poor organisation of the waste causing delay up and down stream; and
- No detailed research into all disposal options for each different waste types or the different issues associated with not keeping each waste type segregated through out each stage of the cycle.

The above can be categorised into three main areas: segregation, logistics and waste hierarchy, all of which need improving in general spill management.

Whose Responsibility?

Where does the responsibility lie to make sure the lessons learnt from the historic spill cases are controlled and improved? To answer this question, we need to look at the controls to which responsible parties refer to for guidance.

Throughout the whole world and on all levels from governmental to independent organisations, the use of contingency plans determines a course of action for certain anticipated circumstances. In the case of spill response almost all parties likely to be involved with have their own version of an oil spill contingency plan. Most of these plans are area specific but some are more generic, such as in the case of an oil tanker operating round the world. The site-specific plans will have the ability to go into as much detail as possible, enhancing the chance of a successful response whilst making sure the above lessons are counted for. It is in these plans that waste management should make its presence felt.

It is evident, through research into contingency plans; some legislation and the author's active involvement in spill operations, that there is still the need to address waste management in these contingency plans. In order to support the implementation of such a chapter, it should be driven by legislation. Currently legislation in many countries does not drive forward the need for proactive waste management.

It has been identified in past spills that there are shortfalls in waste management. The question now has to be asked what industry can do while there is this lack of detail in existing contingency plans and legislation.

The Waste Cycle Stream

A number of documented reports support the author's argument that waste disposal and its subsequent management is a major reason that oil spills have been quoted as 'economical disasters' and this paper suggests waste management to be a major consideration in oil spill contingency plans.

This chapter will highlight the waste life cycle in further detail. Each stage will have to be researched thoroughly before an incident occurs. Although oil spill contingency plans have been written, as a result of legislative requirement, these plans do not contain sufficient details of the aspects of the waste cycle. Identifying each stage of the waste stream is fundamental and should be adhered to in the event of any spill. This section will highlight some of the information that is imperative in creating a comprehensive plan for a coastal response. For each of the stages mentioned below it must be noted that comprehensive listings of all considerations within each stage are not made, but further reading into these options can be carried out using the *IPIECA Guidelines for Oil Spill Waste Minimisation and Management*, Volume 12 of the IPIECA report series.

Segregation And Storage

Available disposal options are highly dependent on how the initial waste generated is segregated and stored. It is imperative that the on site co-ordinator understands the different waste types that are likely to be collected. Segregating these wastes will offer a greater choice of disposal options that have the least environmental and economic impacts. Thorough research must be made into the options available for the containment of these waste types. A local organisation must be appointed with an agreement in place for their assistance during a clean up operation.

The waste stream starts as soon as oiled waste is being collected. The waste management contingency plan should be activated instantly with the appropriate appointed waste personnel.

Minimisation

Limiting the amount of waste entering the waste stream will have a positive impact on final disposal. There are many ways to limit the waste, some as simple as the removal of all debris from the coastal zone before any oil contaminates it. Appointing trained personnel to over see these initial collection steps of the waste stream will ensure that a waste minimisation strategy is adhered to.

Secondary Contamination

Containing all oil and oiled waste in one area is a fundamental step in limiting the amount of environmental damage. If not managed properly oil will easily be transported off site via people and transport. It is the responsibility of the appointed-trained personnel to ensure that appropriate measures are in place for the decontamination of all personnel and vehicles leaving site. All methods for this form of control should be carried out during the contingency planning stage, so that these control perimeters can then be actioned immediately with no delay by trained personnel.

Storage Sites and Transfer of Waste

Designated facilities for the intermediate and long-term storage of waste should be determined during the contingency planning stage. There are many requirements that will have to be met in deciding on an appropriate storage site. These requirements include identifying the right location in environmentally suitable areas; identifying the correct topography and geology that is able to support the estimated quantity of collected waste and the correct usage of containment including liners (*IPIECA report series*

Volume 12, 2004). The aim of this paper is not to highlight all the factors but to emphasise the importance of early investigation and the importance of creating an agreement with the appropriate authorities / organisations. An appointed member of the waste team should be over seeing all activities at the storage site to ensure that the prime objective, waste segregation, is being met at all times. It is imperative that all waste entering this second stage of the stream is kept segregated and stored individually.

The transfer of waste is also the responsibility of a trained waste co-ordinator. The transfer vehicles, like the storage facilities, should be identified during the contingency planning stage and agreement also made with appropriate vehicle organisations. There are also many considerations that will need to be investigated before assigning the task to the most appropriate company.

Waste co-ordinators overseeing the transportation and storage stage of the waste stream have a number of responsibilities, ensuring that:

- Contractors involved in transport or storage are competent and trained;
- Sites are well set up and have a safety plan in place;
- All containers and pits for the storing of oil or oily waste are watertight or carefully lined;
- Containers and pits are compatible with the type of waste e.g. tanks for storing liquids;
- Each batch of waste is labelled or colour coded as to its type of waste and source;
- Any waste documentation such as laboratory results and transfer notes are retained; and
- All contaminated water produced on site is dealt with or disposed of in an environmentally sensitive way that meets with any legal requirements.

All areas contributing to successful waste storage and transfer should be identified at the early stages of writing the contingency plans. There is no time to gather all the answers during the highly charged response.

Treatment, Recycling and Final Disposal

The objective of any oil spill clean up operation is ultimately to treat, recycle or dispose of the oily waste in the most efficient and environmentally sound manner. The disposal options chosen will depend on the amount and type of oil, contaminated derbis, the location of the spill, environmental and legal considerations and the likely costs involved (*Williams, P. T. 2002*).

It is imperative that these considerations are understood with a plan in place to ensure that every possible procedure is met to aid the final disposal of waste. This can only be done through the use of thorough investigation and effective contingency plan. If at any stage of the waste stream the correct management procedures are not met the final disposal options available to limit the impact on the local economy and environment will be encumbered.

There are many conflicts between the quickest and cheapest disposal options and introduction of waste hierarchy. These problems are starting to be recognised by industry but not currently on a governmental level.

CONCLUSION

In the absence of legislation directing the implementation of a waste management hierarchy, it is wholly the responsibility of the industry and governments to provide the world with the confidence that any major disaster of this ilk will be managed properly to limit the amount of environmental and economical impact. This effort can be observed through the use of oil spill contingency plans but past spills have proved there is little effort made with the consideration of waste generated. It is this waste generated during a clean up operation that has the largest lasting economical in the final disposal stages, (notably referring to the disposal of mixed oil and non organic material) and environmental damage caused by limited disposal option owing to the lack of segregation e.g. landfill.

It is essential that early investigation is needed for the successful management of waste. To support this there must be a unified and harmonious effort made on all levels of involvement ranging from governments and oil industry to local organisations, such as transportation firms and disposal sites. It has also been identified in this paper that it is essential to have appointed personnel at each stage of the waste cycle and that training a group of specialised people should be a very important consideration.

An oil spill inevitably leads to numerous tough decisions having to be made surrounding issues such as: supply of resources, prioritising of resources, best practice clean up techniques and the safety of those involved, to name just a few. Arguably the issue of waste can be one of the most significant aspects, in terms of both the environmental and financial burdens. For successful management of these impacts it is essential that the issues are well understood in order that they can be planned for, and ultimately the impacts mitigated. This will be possible through the implementation of an effective Waste Management Contingency Plan.

BIOGRAPHY

Cassie joined OSRL for in April 2002 after graduating with a BSc Hon's Oceanography and Environmental Science. During this time she has attended spills in Ireland, the UK, Spain and West Africa, as well as being involved in co-authoring the IPIECA Waste Management Technical Document and authoring international conference papers.

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