

Oil Spills Clean up Activity

Directions: Your group is to complete the assigned oil spill simulation exercise from the NOAA Spill Tools software loaded on your computer. When you have conducted your test, you need to turn in the final printout with the rest of your assignment.

Each group will be testing a different simulation, we will then compare the different methods to clean up oil as a class. Based on our class discussion and your group's information, your group needs to turn in the following:

- Your printout from the oilspill simulation
- Answers to the questions from your assigned simulation
- A summary of what you think would be the best response for an oil spill. You should make up a mythical oil spill, describe the parameters of the oil spill, and which method would be best to clean up the oil spill.

This will be due on Monday.

DISPERSANT

AREA = 150 KM

4.2 HRS TREAT SLICK

THIS METHOD WOULD
WORK UNLESS ENVIRONMENT

CONDITIONS CHANGE

BURN

AREA = 150 KM

5.5 HRS. PER BURN

5 BURNS

27.5 HRS TOTAL

IS A POSSIBILITY, BUT
TAKES LONGER

MORE COST EFFECTIVE

SKIMMERS

AREA = 150 KM

10 HRS = 1.5% of OIL

WASTE OF TIME

~~OR~~ IF MONEY AND

TIME IS NO OPTION, THIS

IS THE BEST METHOD

DISPERSANT:

PROS: VERY EFFECTIVE

- CAN BE DONE IN TIME
- BETTER FOR ENVIRONMENT THAN BURN

CONS: • CAN BE VERY EXPENSIVE

- DEPENDING ON THE CHEMICAL USED, CAN BE HARMFUL TO THE ENVIRONMENT
- DOES NOT COMPLETELY GET RID OF OIL, JUST BREAKS IT DOWN OVER TIME
- ANIMALS COULD STILL BE HARMED

IN A SITUATION WHERE THE AREA WAS NOT VERY SENSITIVE AND MONEY WAS NOT AN OPTION, THE DISPERSANT WOULD BE THE BEST METHOD. IT TAKES CARE OF THE SPILL THE FASTEST AND CAN BE FAIRLY EASILY DONE. HOWEVER, IT DOESN'T COMPLETELY GET RID OF THE OIL, JUST BREAKS IT DOWN.

IN A SITUATION WHERE TIME IS NOT AN OPTION BUT IT NEEDED TO BE VERY COST EFFECTIVE, THE BURN METHOD WOULD MAKE MORE SENSE. IT CAN BE DONE EFFECTIVELY BUT RELEASES A LARGE AMOUNT OF POLLUTION INTO THE AIR. ALSO, YOU NEED A SITUATION WHERE THE ~~WEATHER CONDITIONS~~ WEATHER CONDITIONS COULD STAY CONSTANT. ANY CHANGE IN WEATHER WOULD CAUSE HARM TO SURROUNDING AREAS.

IN A SITUATION WHERE YOU HAVE PLENTY OF TIME AND YOU ARE IN A HIGHLY SENSITIVE AREA, YOU WOULD USE THE SKIMMING METHOD. IT IS A LOT OF WORK AND COULD TAKE QUITE A BIT OF TIME. IN A HIGHLY SENSITIVE AREA IT IS ~~VERY~~ IMPORTANT FOR THE METHOD DOES NOT HARM THE ENVIRONMENT.

Dispersant

Area = 1 sq. Km.

4.2 hrs. to treat slick.

* 10 hrs. for oil to reach sensitive area.

YES, unless environmental conditions change.

chemical / biological (bacteria)

Time matters

Skimmers

A = 1 sq. Km

10 hrs. → skimming

1.5% of slick

Waste of time.

\$\$ / Time no option

this would be the best.

Ex: coral reef

Burn

A = 1 sq. Km

5.5 hrs. per burn

5 total burns

27.5 total hrs.

*

No, but still a

possibility. Takes

longer than dispersant

but also cheaper.

Smoke plumes.

\$ matters

Oil Spill Solution

After reviewing the data we have concluded that the dispersant method is the best solution because it is the most efficient, the fastest and is best for the environment. It is the quickest because according to the data it only takes 4.2 hours as opposed to burning which takes 25 hours to burn the entire slick and the mechanical equipment but, it only picks up 1.5 % in the allotted time. The dispersant method is better for the environment because it is safe and easy. Burning the oil emits toxic gas into the air which pollutes the environment and other marine habitats. The mechanical equipment is more complicated and therefore disturbs the environment and creates problems. With the mechanical method we see with that with the time available it is only able to recover a small amount of the spilled oil. This shows it is not worth the time and money to utilize this method. The burning method has the possibility of being successful however, it is too dependent upon environmental conditions such as the weather. In conclusion, the dispersant method is the most effective way to properly expel harmful oil while accommodating the well being of the environment. ~~Answer~~

The dispersant method is the quickest way, yet it is costly. In a situation where speed is most important and cost is not a problem the dispersant would be the best choice. If however money is a big issue than burning is the cheapest method for destroying the slick. For example if the affected area was not super sensitive and funds were low burning would be the best choice. But if the affected area is super sensitive such as a coral reef than the use of skimmers would be the safest option, even though it is a lot of trouble and very costly.