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# Creating the context

## I ask myself questions

**1.** Where does oil come from?

**2.** What is oil used for?

**3.** Is oil an inexhaustible resource?

**4.** What is a disturbance?

**5.** What kind of disturbance is an oil spill?

**6.** What is an ecosystem?

# Creating the context *(continued)*

**7.** What is contamination?

**8.** Describe the characteristics of terrestrial and aquatic biomes in the Arctic.

**9.** What are the ecological consequences of an oil spill?

**10.** What factors influence the temperature of the water at the surface of the oceans?

**11.** What is the main difference between fresh water and seawater?

# Creating the context *(continued)*

**12.** Why do oil spills have a more dramatic effect on population density among Arctic species than among species that live in temperate or equatorial regions?

**13.** What is ocean circulation?

**14.** Which type of ocean current particularly affects the movement of an oil slick from a spill? Explain your answer.

**15.** What is atmospheric circulation?

**16.** What is an air mass?

# Creating the context *(continued)*

## I must

**17.** What are the independent and dependent variables of the experiment you must carry out for this case study?

**18.** Reformulate the goal of the case study.

## I think

**19.** Formulate a hypothesis and justify it.

**20.** Choose the four materials that you will test.

## Reflection

| | Yes | No |
|---|---|---|
| Do I fully understand the scientific concepts covered in this case study? | ☐ | ☐ |

# Planning the case study

## I plan

**1.** Make a list of the materials you will need to do your experiment.

**2.** Describe the procedure for your experiment. Remember to plan a control test.

# Planning the case study *(continued)*

**3.** Prepare a table for recording your results and observations. Remember to give it a title.

**4.** What safety rules should you follow during the experiment?

_____

_____

_____

_____

_____

## Reflection

| | Yes | No |
|---|---|---|
| Have I considered other approaches? | ☐ | ☐ |

# Completing the case study

## I experiment

**1.** Do the experiment. Record your observations in the table you have prepared.

**2.** Did you alter your plan of action during the experiment? If so, explain your answer.

**3.** Did you work safely during the experiment? Justify your answer with at least two examples of safety-conscious behaviour.



## Reflection

| | Yes | No |
|---|---|---|
| Did I record and justify each of the changes I made to my plan of action? | ☐ | ☐ |

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# Analyzing results and drawing conclusions

## I analyze my results

**1.** Which materials were most effective for absorbing and recovering the oil from cold salt water? Explain your answer.

**2.** What are the advantages of using these materials? Explain your answer.

**3.** What are the disadvantages of using these materials? Explain your answer.

**4.** What factors did you consider to ensure the reliability of your tests?

# Analyzing results and drawing conclusions *(continued)*

**5.** What are the possible sources of error in your experiment? Suggest a way to eliminate them.

**6.** Would you have obtained the same results in the middle of the ocean? Explain your answer.

## I draw my conclusions

**7.** Which absorbent material would you recommend? Justify your recommendation.

**8.** Was your hypothesis confirmed or not? Explain your answer.

# Analyzing results and drawing conclusions *(continued)*

**9.** Describe the environmental characteristics of the Arctic.