

Ecological Disaster?

Oceans of the world are under increasing pressure from humans. We are increasingly harvesting more and more fish for food, and increasingly introducing harmful chemicals into the ecosystem. As research continues into how the ocean ecosystem is impacted by human use, it is becoming apparent that we are not immune from the damage we cause. One current concern is the biomagnification of fat soluble chemicals like PCB. To test the levels of PCBs in the ocean, scientists are sampling marine mammals such as pinnipeds and Orcas. The first part of this assignment is for you to research what a PCB is exactly.

1. What are PCBs?
2. What are they used for?
3. Are they still manufactured and used?
4. What is their half-life?
5. Are they regulated by any governing body?

Now that you know what PCBs are all about, you need to research how they impact mammalian health.

1. What are the health effects with PCBs?
2. What are acceptable levels of PCBs in humans?

Now that you know the health impacts, you need to research how PCBs are getting into the world's oceans.

1. How do PCBs get into the world's oceans?
2. How should PCBs be disposed of?

Orcas or Killer Whales are considered apex predators. That means they are at the top of the food chain. They have very complex lives and are considered very intelligent.

1. How long do Orcas live? How large are they? What do they eat?
2. Where are located globally?
3. What is a resident group? What is a transient group?
4. What is the definition of culture? Do Orcas have a culture?
5. Are they an endangered species? Are they protected anywhere in the world?
6. What are the biggest threats facing Orcas?

Orcas are accumulating high levels of PCBs in their blubber.

1. Why are Orcas at risk of accumulating high levels of PCBs in their blubber?
2. What do high levels of PCBs do to Orcas?
3. What is biomagnification?

One of the best studied groups of Orcas in the world is located in an area off the coast of British Columbia. A major food source for these Orca is the Chinook salmon.

1. What is the life cycle of a Chinook salmon?
2. Where do Chinook salmon spawn? What do they feed on?
3. Are the Chinook endangered?
4. What are the major threats to Chinook salmon?
5. What is being done to protect them?

Because of declining salmon populations, people have begun to produce fish through a process called aquaculture.

1. In British Columbia, how many fish farms exist?
2. How are these farms regulated?
3. What are some problems associated with fish farms and the environment?
4. How are sea lice a problem in British Columbia? How are they linked to fish farms?
5. How do fish farms impact wild salmon populations in British Columbia?

Without the Chinook salmon, the Orcas will either starve or have to move on. The main question of this project is the following:

You and your group must develop a plan of action to save the population of Orcas near British Columbia. You need to address the problem of PCBs and the decline of Chinook salmon in the region in order to solve or manage the problem.

1. Your group must present you plan of action to the class in a 2 to 4 minute presentation.
2. Your group must create a poster that represents your plan of action.
3. In order to fully solve the problem, you will need to be able to discuss all the questions listed above.

Project Grade:

Presentation	0	15	30
Poster	0	15	30
Equal Participation	0	5	10
Content Knowledge	0	15	30