



Carbon dioxide (CO₂) is a natural component of our atmosphere. Humans also release excess carbon dioxide into the atmosphere through pollution and burning of fossil fuels. When there is too much carbon dioxide in the atmosphere, greenhouse gases become trapped and cause warming temperatures around the globe, including in oceans. This can be harmful to plants and animals. When animals in the ocean poop, they release nutrients and organic carbon. This makes phytoplankton grow rapidly. Phytoplankton use sunlight and carbon dioxide from the atmosphere to make energy in a process called photosynthesis.

Materials:

- Bag of M&Ms (or small items to represent carbon dioxide and phytoplankton)
- Dice
- Game Board (found on the first page. Feel free to color your game board before playing!)

Set Up:

- Each player needs their own board (the first page of this document)
- In the sky of your game board, lay out 10 blue M&Ms (representing CO₂ in the atmosphere)
- Under the line on the game board, place 5 green M&Ms (representing phytoplankton near the surface of the water)
- Set aside an extra 20 green M&Ms. These are extra phytoplankton you will need as the game continues.

Rules:

- When you have 5 phytoplankton, you can remove one piece of CO₂ (blue M&M's).

Play:

- Establish an order for players to take their turn.
- Roll the dice.
 - If you roll a **1** or **6**, remove 2 phytoplankton (green M&Ms) from the water.
 - *Fish eat phytoplankton and phytoplankton die. When they die, they no longer remove carbon dioxide from the atmosphere.*
 - If you roll a **2**, **3**, **4**, or **5**, the whale poops and 3 phytoplankton (green M&Ms) are added to the system. Add phytoplankton to the water from the extra pile of M&M's.
 - *Whale poop has a lot of nutrients in it. This causes phytoplankton to grow and reproduce quickly.*
 - After you roll the dice and add or subtract phytoplankton, you can decide if you can remove a CO₂ from the system (if you have enough phytoplankton). You can only remove 2 CO₂ (blue M&M's) per turn.

- *When phytoplankton undergo photosynthesis, they remove CO₂ from the atmosphere. When there are more phytoplankton in the water, there is more photosynthesis occurring and more carbon dioxide is removed.*

The first person to remove all 10 carbon dioxide wins!