

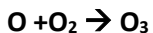
## Ozone Ball Activity

You will need:

- 2-3 boxes of tennis balls (I got “dead/flat” balls from our tennis coach)
- 3 rulers
- Large area like a hallway or outside☺

### OZONE PRODUCTION

1. Choose 3-4 students depending on class size to represent the sun. They will toss the tennis balls (UVB and UVC radiation) to the other students.
2. Have the other students join up in groups of two (O<sub>2</sub>) or three (O<sub>3</sub>).
3. Count the groups of 3 students.
4. When one person in a group of 2 catches a ball, they split apart and must go attach to a different person or a set of 2 people. They can drop the ball there or toss the ball off to the side.
5. When a person in a group of 3 catches a ball, one person must leave and either go attach themselves to a different set of 2 or another single person looking for a place to go.
6. Allow this simulation to run itself for a bit and freeze. Count the groups of 3 students. Repeat 3-4 more times. In a class of 30, we had around 4 groups of 3 most of the time.
7. Explanation: Stop this part and gather the students around a piece of butcher paper or poster board and explain what the students represented and the ozone production equations:



### OZONE DEPLETION

1. Choose 3-4 new students to be the sun and toss the balls.
2. Choose 3 students to stand off to the side. You may have them carry something like a ruler or something that makes them look different. These students represent the chlorines from the CFCs.
3. Have the remaining students join up in groups of two (O<sub>2</sub>) or three (O<sub>3</sub>). These students will catch balls and run the simulation like in ozone formation.
4. The chlorines will look for the groups of 3 students, go and grab one of the people and take it hostage on the sideline. The chlorine and hostage person must wait until a free student from the mixture comes to “rescue” the hostage person. Once that occurs, those 2 students join up (O<sub>2</sub>) and the chlorine is available to go grab another hostage from a group of 3.
5. In this simulation, the single people have 3 choices: join with a different single person, join with a pair, or rescue a hostage.
6. Before beginning, count the number of groups of 3. Let the simulation run, stop it, and count the groups of 3. Do this several times. In a class of 30, we had about 1-2 groups of three each time.
7. Explanation: Gather the students and talk about the difference in the number of groups of 3 in the first simulation and the second, CFCs, chlorines and the following depletion equations:

