Name

STUDENT

HANDOUT

How Much is a PPM?

The current amount of carbon dioxide in the atmosphere is about 414 parts-per-million (ppm). That means that there are 414 molecules of carbon dioxide for every million molecules of gas in the air. Parts-per-million is a unit just like inches or miles or meters.

We can also write parts-per-million as a fraction. Look at the three fractions below:

 1 percent (1%) = $\frac{1}{100} 1 ppm = \frac{1}{1,000,000} 414 ppm = \frac{414}{1,000,000}$

One percent pollution would mean 1 molecule of pollution for every 100 molecules of air. 1 ppm is 1 molecule of pollution for every 1,000,000 molecules of air, so 414 ppm is 414 molecules of pollution for every million molecules of air.

414 ppm seems like a big number, but parts-per-million is a pretty small unit. How small is it really? Think how long one day is. One day in a million is the same as one day in 2,737 years, so 414 parts per million is like 1 year in 2,413 years!

**How much carbon dioxide is in our jar?**

Think about our atmosphere in a jar. If we want to show how much carbon dioxide is in our atmosphere, we would need to put 414 beans in a jar with a million beans. But our jar has far fewer than a million beans in it! In fact, our jar only has about 5,000 beans. So how many beans of carbon dioxide do we need to put in our jar?

|  |
| --- |
| **How many carbon dioxide beans should go in our jar?** |