This is the print version of the Skeptical Science article 'Breathing contributes to CO2 buildup', which can be found at http://sks.to/breath.

# Does breathing contribute to CO2 buildup in the atmosphere?

**What The Science Says:**
By breathing out, we are simply returning to the air the same CO2 that was there to begin with.

**Climate Myth: Breathing contributes to CO2 buildup**
"Pollution; none of us are supporting putting substances into the atmosphere or the waterways that might be pollutants, but carbon dioxide is not a pollutant. If Senator Wong was really serious about her science she would stop breathing because you inhale air that's got 385 parts per million carbon dioxide in it and you exhale air with about ten times as much, and that extra carbon comes from what you eat. So that is absolute nonsense." (Ian Plimer)

The very first time you learned about carbon dioxide was probably in grade school: We breathe in oxygen and breathe out carbon dioxide. Any eight-year-old can rattle off this fact.

More specifically, the mitochondria within our cells perform cellular respiration: they burn carbohydrates (in the example shown below, glucose) in the oxygen that we breathe in to yield carbon dioxide and water, which we exhale as waste products, as well as energy, which is required to maintain our bodily processes and keep us alive.

## $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ + energy

## carbohydrates + oxygen → carbon dixoide + water + energy

It should come as no surprise that, when confronted with the challenge of reducing our carbon emissions from the burning of fossil fuels, some people angrily proclaim, "Why should we bother? Even breathing out creates carbon emissions!"

This statement fails to take into account the other half of the carbon cycle. As you also learned in grade school, plants are the opposite to animals in this respect: Through photosynthesis, they take in carbon dioxide and release oxygen, in a chemical equation opposite to the one above. (They also perform some respiration, because they need to eat as well, but it is outweighed by the photosynthesis.) The carbon they collect from the $CO_2$ in the air forms their tissues - roots, stems, leaves, and fruit.

These tissues form the base of the food chain, as they are eaten by animals, which are eaten by other animals, and so on. As humans, we are part of this food chain. All the carbon in our body comes either directly or indirectly from plants, which took it out of the air only recently.

Therefore, when we breathe out, **all the carbon dioxide we exhale has already been accounted for.** By performing cellular respiration, we are simply returning to the air the same carbon that was there to begin with. Remember, it's a carbon *cycle*, not a straight line - and a good thing, too!

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