Do we exhale carbon dioxide?

It is also often said, in a very simplified way, that we inhale oxygen and exhale CO2. However, this formulation is highly inaccurate. In reality, we inhale mostly nitrogen, which makes up more than 78% of the air in the atmosphere. Oxygen, as the second most abundant element, makes up approximately 20.95% of the inhaled air. Carbon dioxide makes up the aforementioned approximately 0.04%. And what about the air that we exhale? Again, it clearly contains the most nitrogen, on average about 74.4%. Oxygen accounts for about 15% and carbon dioxide around 4-5%. On the one hand, there is an approximately 100-fold increase in its concentration, yet the air that we exhale also contains approximately three times more oxygen than CO2. And if we wanted to state the phrase from the beginning of this paragraph accurately, we could say that we inhale nitrogen and exhale nitrogen.

Greenhouse gases

Now, let's finally look at CO2 from the perspective of air quality and its importance. CO2 is one of the so-called greenhouse gases. The sun's rays fall on the Earth during the day in the form of short-wave radiation, but on Earth this is changed into long-wave radiation and then radiated back into space. Greenhouse gases allow short-wave radiation to pass through, but only partially allow long-wave radiation. This is why they cause heat to accumulate on the Earth - the so-called greenhouse effect. At this point, it is necessary to say that without greenhouse gases, life on Earth as we know it would not be possible. In their absence, the average temperature of the Earth would only be around -19 °C, instead of the real +15 °C. However, the increase in greenhouse gas concentrations causes further warming, which may no longer be desirable and causes a number of changes.

Since the beginning of the Industrial Revolution around 1750, there has been an approximately 45% increase in atmospheric CO2 concentrations, from 280 ppm at the time to 415 ppm in 2019. A significant source of CO2 is the combustion of fossil fuels. However, CO2 is far from the only greenhouse gas; there are other gases that are significantly more effective in causing global warming. The unit referred to as the global warming potential depends on both the effectiveness of the given molecule in causing global warming and its lifetime in the atmosphere. CO2 has an assigned GWP value of 1. For example, methane or dichlorodifluoromethane, also known as Freon 12, which is demonstrably damaging to the ozone layer, has a significantly higher value. Overall, water vapor contributes the most to the Earth's greenhouse effect, as it is represented in the atmosphere in the highest concentration of greenhouse gases.

Pollutant?

CO2 is often talked about in connection with global warming and there is a general effort to reduce CO2 emissions. CO2 reduction is probably most often discussed in the

context of automobile emissions. This effort is certainly very important and significant in the long term. But is it a pollutant?