

Understanding Pollution: The Truth about the Air We Breathe

Every second of every day you are doing something so absolutely crucial that you normally don't even think about it: Breathing. The average adult takes 12-16 breaths per minute every minute every day 365 days a year.ⁱ That equals out to between 6,307,200-8,415,184 breaths every year. You would assume that because clean breathable air is so vital to human existence that it would be protected, and that a thing such as air pollution would not exist. Sadly, this is not the case. Because the fact that breathing is so essential to human existence, air pollution is one of the most dangerous types of pollution out there. Air pollution is defined by the Merriam-Webster Dictionary as "Release into the atmosphere of gases, finely divided solids, or finely dispersed liquid aerosols at rates that exceed the capacity of the atmosphere to dissipate them or to dispose of them through incorporation into the Biosphere."ⁱⁱ Air pollution is not confined to only one area of the world, nor is it confined to a single type of pollutant. There are legions of different pollutants that all cause some level of damage to the air that we so nonchalantly inhale every day.



understanding
POLLUTION 
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Every time that you breathe out you are releasing a gas called CO₂, which is then used by plant life in order for them to survive. Plant life is kind enough to provide us with Oxygen in exchange, and thus the circle of life is continued. But too much of anything is bad. In 2013 39.8 billion tons of CO₂ were pumped into the atmosphere through the burning of fossil fuels alone.ⁱⁱⁱ To put that into perspective, according to the Hawaiian Volcano Observatory all volcanoes worldwide release only 200 million tons of CO₂ into the atmosphere every year.^{iv} In the year 1900 there was only 2.5

billion tons of CO₂ released into the atmosphere. That means that in a little over a century we have increased CO₂ production roughly 16 times over.^v CO₂ that is not then converted into Oxygen has only one place to go: up. It gathers into the atmosphere, and there it waits. You can debate the idea of climate change all you want, but the fact remains that CO₂ levels are rising in the ozone, and we sadly can't live off CO₂.



Now, air pollution is more than just CO₂. Another danger of air pollution is called acidification. When certain chemicals such as sulfur dioxide are released into the air it is possible for them to mix with rain clouds. When this occurs, we get what is called acid rain.^{vi} Just from the name itself, you know it cannot be good. Acid rain can cause damage to plant life, animal life, manmade structures, and man himself. Factor in the fact that if the rain is falling over a body of water those chemicals that are strong enough to damage manmade structures are now in ground water, and you can see the dangers.^{vii} The plant life in the waters will die, which will cause the herbivores in the water to die, which will cause the carnivores in the water to die. Sulfur dioxide is released in many industrialized cities. You see, Sulfur Dioxide is one of the chief ingredients in that oh so lovely thing called smog. You know, those black clouds that you see pouring out the top of factories? That smog.



Having discussed CO₂, and sulfur dioxide let us move onto another, very irritating pollutant: Odors. Now, you may be thinking “Wait, odors? As in smells?” Well...yes. Odors are chemical compounds that are in the air which falls in the definition of air pollution. So, take a moment and think of some of the things that you smell: Garbage, Sewage, Industrial by-products. What does it mean that you can smell them? It means that some chemical is in the air. Garbage, sewage, and industrial by-products are all forms of pollution in their own right with their own risks and dangers to the environment and mankind, and their smell is both a by-product of that pollution, and a further pollution of the air. Pollution has both earth-shattering consequences, and more minor consequences. Some of the effects of pollution are so minor that we don’t even recognize them as such. A really bad smell is one example of that. However, there are earth shattering consequences. As more and more manufacturing has moved from the United States to China, you would think that pollution is going down in the US...You would be wrong. Due to the existence of what are known as Westerlies, which are powerful winds that travel from the east to the west, China is “exporting” pollution to the West Coast of the United States. So much pollution is being added that to West Coast cities that they are violating National EPA standards on average of one extra day a year.^{viii}

Air is one of the absolutely essential components required for humankind to not only prosper, but to even exist. Air pollution is one of the greatest dangers to our lives. It comes in so many forms, and because air is everywhere, it effects every aspect of our planet. Since air pollution is such a huge issue with many contributing factors it is not something that can be easily dealt with. Despite

all of the issues involved in finding a solution, a solution must be found in order for us to continue to breathe that clean air that is so vital to not just a healthy lifestyle, but life itself.

About the Author



Dominick Principe is a graduate of Rowan University with dual Bachelor Degrees in Elementary Education and Writing Arts. He is a prolific reader who devours any book put before him, and feels that life is one great long book without an end. He fills his hours constantly exploring new information, and seeking to educate himself in the ways of the world. He puts all of that knowledge and his passion for learning to good use teaching English as a second

language to students of all ages. When his nose isn't buried in a book, or in class teaching, then he can generally be found typing away at his computer working on some random piece of writing that he was inspired to do.

ⁱ "Vital Signs (Body Temperature, Pulse Rate, Respiration Rate, Blood Pressure)." *HopkinsMedicine.org*. John Hopkins Medicine. Web. 10 Nov. 2014. <<http://www.hopkinsmedicine.org/health/conditions-and-diseases/vital-signs>>.

ⁱⁱ "Air Pollution." *Merriam-Webster*. Merriam-Webster. Web. 10 Nov. 2014. <[http://www.merriam-webster.com/concise/air pollution](http://www.merriam-webster.com/concise/air%20pollution)>.

ⁱⁱⁱ MailOnline, Ellie. "Carbon Emissions Reach 40 Billion Ton High: World Faces 'dangerous Climate Change' - and China, the US and India Are the Worst Offenders." *Mail Online*. Associated Newspapers, 22 Sept. 2014. Web. 29 Oct. 2014. <<http://www.dailymail.co.uk/sciencetech/article-2764323/China-US-India-push-world-carbon-emissions-up.html>>.

^{iv} "Which Produces More CO₂, Volcanic or Human Activity?" *Which Produces More CO₂, Volcanic or Human Activity?* Hawaiian Volcano Observatory, 15 Feb. 2007. Web. 29 Oct. 2014. <http://hvo.wr.usgs.gov/volcanowatch/archive/2007/07_02_15.html>.

^v "Global Emissions." *EPA*. Environmental Protection Agency. Web. 10 Nov. 2014. <<http://www.epa.gov/climatechange/ghgemissions/global.html>>.

^{vi} "Acid Rain: Do You Need to Start Wearing a Rainhat?" *Acid Rain, from USGS Water-Science School*. United States Geological Survey. Web. 10 Nov. 2014. <<http://water.usgs.gov/edu/acidrain.html>>.

^{vii} "Your Cool Facts and Tips on Air Pollution." *ESchoolToday*. Web. 29 Oct. 2014. <<http://eschoolday.com/pollution/air-pollution/effects-of-air-pollution.html>>.

^{viii} Landau, Elizabeth. "China's Exports Linked to Western U.S. Air Pollution." *CNN*. Cable News Network, 21 Jan. 2014. Web. 10 Nov. 2014. <<http://www.cnn.com/2014/01/20/health/pollution-china-pnas/>>.