

The Effects of Air Pollution on The Human Body

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Have you thought of how harmful air pollution can be? The following three death tolls are attributable to air pollution according to this study: 8.8 million deaths due to indoor and outdoor air pollution in total, 5.5 million deaths from all anthropogenic sources, and 3.6 million deaths from burning fossil fuels (Lelieveld et al.). Air pollution can harm acutely, as well as chronically, potentially affecting every organ in the body (Carrington). The harmful effects of air pollution on the human body start when air pollution is inhaled. This paper argues about the effects of air pollution on the human body. In this research paper, first, the effects of air pollution on the respiratory system (lungs) will be discussed, then the effects on the heart will be figured out, after that the effects on the eyes will be going through, and finally, the effects on the brain's function will be presented.

First of all, as known by many people, the respiratory system is very important to the human body. If it is damaged, it can harm the body. The lungs are part of the respiratory system ("How Lungs Work"). The lungs are a group of organs and tissues that work together to help you breathe. The respiratory system's main job is to move fresh air into your body while removing waste gases ("How Lungs Work").

Additionally, air pollution has its main damage to the respiratory system - the lungs. When someone is exposed to too much air pollution, their respiratory system will be harmed. Breathing in air pollutants can bother your lungs and will cause symptoms like shortness of breath, coughing, wheezing, asthma episodes, and chest pain. Long-term effects of cumulated exposure to urban air pollution include lung growth impairment, chronic obstructive pulmonary disease (COPD), lung cancer, and probably the development of asthma and allergies (Maesano and Dab). Indoor air pollutants can also lead to lung-related diseases. Examples of indoor air pollutants that can harm the respiratory system include radon, mold, and

dust. Indoor air pollutants will not have as big an effect on the human body's respiratory system (lungs) as outdoor ones will have. People who have lung-related diseases, for example, asthma, will get more bothered by air pollutants when they are exposed to air pollution, as the pollutants will harm the arteries by narrowing them – thus causing difficulty breathing. The most common types of air pollutants that can damage the lungs are:

particulate matter (PM): small particles that can irritate and cause damage to the airways, nitrogen dioxide: a gas that can irritate the airways and cause a flare-up of asthma or COPD, ozone: a gas that can reduce lung capacity and irritate the airways, sulphur dioxide: a gas that can irritate the lining of the airways, particularly of individuals with asthma (Smith).

Next, the effects of air pollution on the heart will be figured out. The heart is the second most affected organ in the human body affected by air pollution. The human heart is an organ that pumps blood throughout the body via the vessels of the circulatory system, supplying oxygen and nutrients to the tissues and removing carbon dioxide and other wastes (Lewis and Dutfield).

Furthermore, there is now overwhelming evidence that air pollution results in serious harm not only to the lungs but also to the heart (Carrington). When someone inhales too much air pollution, it can increase the risk of heart attacks as muscles weaken and arteries narrow. Inhaling air pollutants can cause many heart-related problems, for example, cardiovascular diseases, heart attacks, the narrowing of the arteries, and the weakening of the muscles. When people breathe in poor-quality air, the air pollutants can travel into the bloodstream through the lungs, and then to the heart.

Also, the inhalation of air pollutants can increase the risk of cardiovascular and heart diseases. Air pollutants can damage your blood vessels by making them narrower and harder (when the blood vessels become narrower and harder, it makes it more difficult for your blood to flow freely), it can make the blood clot, can increase your blood pressure because your heart is pumping faster to move the blood that can't flow properly, it can increase the strain on your heart muscle by working harder than it should, and it can affect the heart's electrical system that controls your heartbeat (this can cause abnormal heart rhythms) (“Air Pollution”).

Air pollutants can also potentially cause small changes to the structure of the heart. For people with existing heart and circulatory conditions, this damage can increase their risk of events like a heart attack or stroke.

(“Air Pollution”):

Harmful air pollutants lead to cardiovascular diseases such as artery blockages leading to heart attacks (arterial occlusion) and death of heart tissue due to oxygen deprivation, leading to permanent heart damage (infarct formation). The mechanisms by which air pollution causes cardiovascular disease are thought to be the same as those responsible for respiratory disease: pulmonary inflammation and oxidative stress (“How Air Pollution Contributes to Heart Disease”).

Third of all, the effects of air pollution on the brain and the mind will be presented. In the human body, the brain is an important organ. If it is damaged it can harm the body. The brain is a complex organ that controls thought, memory, emotion, touch, motor skills, vision, breathing, temperature, hunger, and every process that regulates our body (“Brain Anatomy and How the Brain Works”). The brain and mind are also affected by air pollution. Over the past years, researchers have found that high levels of air pollution may damage children's cognitive abilities, increase adults' risk of cognitive decline, and contribute to depression. There is also evidence that not enough good sleep can be a consequence of breathing toxic air.

In addition, inhalation of too much dirty air may cause many brain-related diseases. For instance, if someone is exposed to too much air pollution they might experience these problems: Strokes, dementia, and reduced intelligence. These problems (Strokes, dementia, and reduced intelligence) are all conditions affecting the brain that have been linked to air pollution:

Air pollutants - like ground-level ozone, carbon monoxide, sulphur dioxide, nitrogen dioxide, and lead - can enter the brain through olfactory nerves or blood. Cerebrovascular disease linked to pollution may cause dementia (which is a brain-related disease caused by air pollution) (“The Air We Breathe”).

Lastly, the effects of air pollution on the eyes will be gone through. The eyes are also impacted by air pollution. The eye is a sensory organ. It collects light from the visible world around us and converts it into nerve impulses (Yiallourous). The eyes

provide humans with the ability to receive and process visual detail. Air pollution is why eye allergies and conjunctivitis in people of all ages have increased.

According to doctors, the high levels of pollutants like nitric oxide, nitrogen dioxide, and sulphur dioxide in the air make the tear film of the eyes more acidic (“Air Pollution Major Cause of Eye Infection”):

Almost all age groups are being affected by air pollution. “Majority of patients are young children, middle-aged and senior citizens. Air pollution affects them badly and results in eye irritation and sometimes in redness, and watery eyes,” said Kamal B. Kapur, an ophthalmologist at city-based Sharp Sight Centre.

Moreover, long-term exposure to air pollution also erodes eye health and vision. If someone is exposed to too much air pollution, the air pollution can cause dry eye syndrome, watering, and burning sensations, blurred vision, and glaucoma.

Overall, air pollution can harm the whole body – including the respiratory system (lungs), the heart, the brain, and the eyes. Indoor air pollution (like radon, mold, and dust) and outdoor air pollution (for instance: carbon dioxide, Sulphur dioxide, nitrogen dioxide, and ozone) can have many effects on the human body. Long-term effects of exposure to air pollution can lead to allergies, asthma, lung growth impairment, cardiovascular diseases, heart attacks, strokes, dementia, reduced intelligence, dry eye syndrome, watering and burning sensations in the eyes, and blurred vision. Air pollution can also cause short-term effects on the human body, for example, shortness of breath, coughing, wheezing, asthma episodes, and chest pain. The harmful effects of dirty air begin when the pollution is inhaled through the nose and mouth. From the nose and mouth, the air pollution goes into our bloodstream and it then goes into the lungs, the heart, the brain, and other parts of the body. As seen in this paper, air pollution is harmful and so precautions have to be taken to ensure safety.

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