



HEALTH NOTES



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Adventist Medical
Evangelism Network

AMEN's mission is to motivate, train, and equip Seventh-day Adventist health-care professionals to team with pastors and members, uniting the church to restore Christ's ministry of healing to the world, hastening His return. To learn more about AMEN and get involved go to: amensda.org.

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Air Pollution Hurts the Lungs

AIR POLLUTION is not a single entity. It is composed of various amounts of different substances. Some components are in a gas phase while others are very small particles that are so small, they remain suspended in the air and don't settle out over time.

In the gas phase, important components are ozone, which is made up of three oxygen molecules bound together (O_3) and various oxides of nitrogen (NO_x). Fine particulate matter may be composed of inorganic dusts and, in smoky environments, very fine black carbon particles.

Sudden severe air pollution, a flu epidemic, and natural disasters are the only things that can cause a sudden rise in unexpected deaths in a local community. Long term exposure to air pollution has been shown to cause increased rates of lung infections and contributes to coronary heart disease deaths. It has only recently been linked to emphysema in non-smokers.

Emphysema is a lung disease where there is a slow, progressive destruction of the thin walls of hundreds of millions of small air sacs in the lungs. As the thin tissue walls of the air sacs are destroyed, larger and larger tissue bubbles form that are much less efficient in transporting oxygen into the blood stream and off-loading the carbon dioxide we breathe out with each breath. The extent of emphysema can be accurately measured by a high resolution CT scan of the lungs coupled with tests of breathing dynamics.

A study just published links chronic exposure to relatively low levels of air pollution to the progressive development of emphysema in non-smoking people who live in cities. In this study there were 6,814 city dwelling, white, black, Hispanic, and oriental adults aged 45-84 years of age enrolled beginning in 2000. The study ran through 2018.

Participants lived in Winston-Salem, New York, Baltimore, St. Paul, Chicago, and Los Angeles. Various air pollutants were measured continuously by the EPA (Environmental Protection Agency). All these cities had significant levels of air pollution but Winston-Salem had the highest ozone levels, Los Angeles had the highest fine particulate matter, and New York had the highest levels of oxides of nitrogen and black carbon.

Each participant had CT scans of the lungs and breathing tests done repeatedly throughout the study. It turns out that some air pollution components are worse than others in terms of causing emphysema. The most damaging components were the gas phase components. Ozone was the worst followed closely by nitrogen oxides. Of the particulate matter, the fine dusts were more harmful than the black carbon. Combinations of components had additive effects in terms of lung damage.



As expected, emphysema progression was most rapid in current cigarette smokers. City dwellers who live close to freeways have more emphysema, heart disease, and cancer than those who live on urban streets away from major highways. Country living provides the cleanest possible air.

THE BIBLE speaks of air pollution being severe as part of the curse of the fifth angel in Revelation.

“Then the fifth angel sounded: And I saw a star fallen from heaven to the earth. To him was given the key to the bottomless pit. And he opened the bottomless pit, and smoke arose out of the pit like the smoke of a great furnace. So, the sun and the air were darkened because of the smoke of the pit.”
—*Revelation 9:1-2 (NKJV)*

ELLEN WHITE recognized the dreariness of city life where air pollution existed. She recommended escape to the country.

“To many of those living in the cities who have not a spot of green grass to set their feet upon, who year after year have looked out upon filthy courts and narrow alleys, brick walls and pavements, and **skies clouded with dust and smoke**,—if these could be taken to some farming district, surrounded with the green fields, the woods and hills and brooks, the clear skies and the fresh, pure air of the country, it would seem almost like heaven.”
—*Country Living, p. 19.*

“The free, **pure air of heaven** is one of the richest blessings we can enjoy.”
—*Testimonies to the Church, vol. 2, p. 527.*

“Look up to the blue sky, **unobscured by the city’s dust and smoke**, and breathe the invigorating air of heaven. Go where, apart from the distractions and dissipations of city life, you can give your children your companionship, where you can teach them to learn of God through His works, and train them for lives of integrity and usefulness.”
—*The Ministry of Healing, pp. 265-267.*

The American Lung Association has analyzed the data of air quality across North America. Bangor, Maine, was found to have the cleanest air. You can find how clean your air is at <https://www.lung.org/our-initiatives/healthy-air/sota/>.

Be thankful for clean air.

¹M. Wang, et.al, “Association Between Long-term Exposure to Ambient Air Pollution and Change in Quantitatively Assessed Emphysema and Lung Function, JAMA, August 13, 2019, 546-556.