


2018

Outdoor Air Quality

Taylor Curley

Augustana College, Rock Island Illinois

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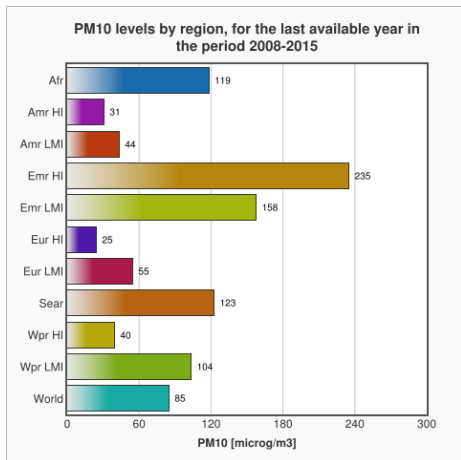
Curley, Taylor. "Outdoor Air Quality" (2018). *Global Issues in Public Health*.
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OUTDOOR AIR QUALITY

Public Health Issue:

A significant health issue that is plaguing the world is outdoor air quality. Outdoor air quality is an environmental condition that is caused by different air pollutants. The major air pollutants are particulate matter, ground-level ozone, nitrogen dioxide, carbon monoxide, lead, and sulfur dioxide (EPA, 2018).



Location:

Air pollution affects the entire world, but it is the worst in the Middle East, Southeast Asia, and Africa where they have growing cities. India hosts eight of the top 30 cities with the worst air quality. Ultimately 98 percent of cities that contain the most air pollution were in low and middle-income countries where the people have air quality at unhealthy levels, similarly 56 percent of cities in high-income nations have unhealthy air (Panko, 2016).

Image: World Health Organization [WHO]. (2016). Retrieved from http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/

Populations Affected:

Most of all populations are affected by outdoor air pollution, only 12 percent of the cities surveyed by WHO met the WHO air quality requirements. People living in low- or middle-income cities have the worst air quality (WHO, 2016). However, people with asthma, lung disease, and cardiovascular disease as well as unborn babies (pregnant women), children, and older adults are affected the most. (NSW, 2013). Due to conflicting research, it is uncertain if any one ethnic group is more susceptible to outdoor air pollution than others (ALA, 2018).

Epidemiology:

The main causes of air pollution from the burning of fossil fuels are from transportation (vehicle emissions), the heating and cooling of homes, and industry. Short term symptoms of air pollution include: increased rates of myocardial infarction and ischemia in those at risk, exacerbation of cardiac failure, increased incidence of arrhythmia increased incidence of deep vein thrombosis, increased incidence of stroke, increased wheeze, exacerbation of asthma, exacerbation of chronic obstructive pulmonary disease, bronchiolitis, and other respiratory infections (Abelsohn & Stieb, 2011 p.883). The long-term health effects are increased mortality, increased myocardial infarction, accelerated development of atherosclerosis, increased blood coagulability, increase in systemic inflammatory markers, increased incidence of pneumonia, increased incidence of lung cancer, impaired lung development in children, development of new asthma, increased incidence of low birth weight, and increased incidence of preterm birth (Abelsohn & Stieb, 2011p.883). Although these are all risks and possible outcomes there are some protective measures an individual can take. Some of these measures include staying indoors and reducing outdoor activity when ambient levels are high, reducing exposure to

environments near sources of air pollution, and wearing personal protective gear such as respirators (Lambach, Meng & Kipen, 2015).

Diagnosis and Outcomes:

Air quality is brought to public attention using the Air Quality Index. This system is used to notify people when air pollution is at a level that is considered dangerous. These levels are

Index Value	Name	Color	Advisory
0 to 50	Good	Green	None
51 to 100	Moderate	Yellow	Unusually sensitive individuals should consider limiting prolonged outdoor exertion
101 to 150	Unhealthy for Sensitive Groups	Orange	Children, active adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion
151 to 200	Unhealthy	Red	Children, active adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else should limit prolonged outdoor exertion
201 to 300	Very Unhealthy	Purple	Children, active adults, and people with respiratory disease, such as asthma, should avoid outdoor exertion; everyone else should limit outdoor exertion
301-500	Hazardous	Maroon	Everyone should avoid all physical activity outdoors.

measured daily and can be found in newspapers, heard on the radio, television, or seen on websites. The Air Quality Index measures ozone, particulate matter, as well as four other pollutants (ALA, 2017). Outcomes of outdoor air pollution are morbid. About three million premature deaths worldwide are caused by air pollution, as well as causing 5.4 percent of all deaths in the world. In the United States alone 46,600 deaths per year are caused by outdoor air quality (WHO, 2016).

Image: American Lung Association [ALA]. 2017. Retrieved from <http://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/air-quality-index.html>

Solutions:

One solution that has already been attempted is in Mexico where the government has created laws that will reduce carbon dioxide emissions by 30 percent by 2020 and 50 percent below 2000 levels by 2050 (Sierra-Vargas & Teran, 2012) They also plan to create 35 percent of the country's energy from renewable sources by 2024. This is important because the country has already begun converting gas from landfills to electricity that powers the light rail transit system and city street lights at night in Monterrey (Sierra-Vargas & Teran, 2012). However, some weakness includes the struggle to enforce the laws, urban planning, and excessive industrialization (Sierra-Vargas & Teran, 2012). Another intervention could be the use of trees. Cities deal with the most air pollution but have little room for trees to help get rid of it. Although there may not be room on the ground, potentially rooftop gardens could help. These may not solve all the problems, but it can help in a small way.

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