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Health and Safety Effects of Airborne Dust in the Americas

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Extreme weather events, including wildfires and dust storms, are rising in response to climate change. The frequency of dust storms in North America has increased significantly in the past several decades and is projected to rise further under climate change. Despite the imminent risks, the health and safety effects of dust events remain largely elusive. This work examines the effects of sand and dust storms on human and environmental health and transportation safety in the Pan-American region. Exposure to dust particles is associated with a number of health effects, including asthma, heart attack, Valley fever, and premature deaths. Among these effects, Valley fever, an infectious disease caused by haling a soil-dwelling fungus Coccidioides, is unique in the Pan-American region where the health burden of this disease amounted to $40 billion in the past decade. Rising dust also poses imminent risks to air, marine and ground transportation. For instance, there was a total of 251 deaths from dust-related accidents for the years 2007 to 2017. Dust events are responsible for 4% of total weather-related fatalities and dust fatalities account for 0.07% of all-cause vehicle accidents in the United States. Overall, windblown dust events cause a comparable life loss to other weather hazards such as hurricanes, thunderstorms, lightning, and wildfires. Finally, we will discuss the latest development of mitigation measures to combat dust storms at regional and international levels in the Pan-American region and internationally.