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DUST STORMS IN SOUTH AFRICA

How can science and knowledge can be translated for public awareness

Major dust storms, the front edges of which may span tens of kilometres and pass over great distances, are well known across the world, including in Africa, Asia and America.

Often described as a 'solid wall of dust', dust storms have wreaked havoc with agricultural land, caused immense damage to property, worsened air quality, disturbed road and air transportation, and caused harmful health impacts, even loss of life.

Dust storms have been associated with both natural factors, such as precipitation and wind strength, and human factors, such as poor agricultural practices. There also is growing concern that our changing climate may be causing an increase in the frequency, intensity and distribution of major dust storms.

From a public health perspective, there is a need to explain the implications of dust storms, and share preventative measures to protect human health by increasing public awareness. Drawing on international and local information about dust storms, Professor Angela Mathee and Dr Vusumusi Nkosi of the South African Medical Research Council (SAMRC) developed a public information sheet for South Africans.

The human consequences of the Dust Bowl in the United States of America

A devastating period of dust storms occurred in the United States of America in the 1930s. Known as the Dust Bowl, it followed a period of drought, with strong winds sweeping from Texas through to Nebraska.

Millions of tons of topsoil were shifted across millions of acres of land over a period of approximately a decade. The Dust Bowl was exacerbated by several human factors, including local land policies and harmful agricultural practices.
During this period, severe dust storms, sometimes called 'black blizzards', would darken the skies for several days. At homesteads, dust deposition often needed to be cleared with spades, and would intrude into even well-sealed dwellings, forming coatings on food, furniture and people's skin.
A major consequence of the dust storms was crop failures, and the deaths of people and livestock. A condition known as 'dust pneumonia' was also common. The devastating consequences sparked a migration among despairing farming families (more than 2 million people migrated) to search for jobs and better living conditions elsewhere.

The health consequences of dust storms point to a range of effects and are a serious concern. For example, exposure to dust storms has been associated with skin and eye irritation, decreased lung function, increased cardiovascular effects, increased hospital visits and admissions, and more frequent use of emergency services.

In the longer term, for people exposed to many dust storms over many years, there have also been associations with adverse pregnancy outcomes and birth problems. Children, neonates, the elderly, pregnant women and people with chronic cardiopulmonary diseases have been shown to be particularly vulnerable to the health consequences of dust storms.

In South Africa, there is limited information available on dust storm patterns, with a key reason being the lack of a detailed, long-term national system of data collection on dust storms. This database is needed to assess changes in the frequency, severity and distributions of dust storms in the country.

From sources of information like anecdotal accounts and satellite imagery, there is evidence that major dust storms do occur in South Africa from time to time. For example, satellite imagery indicated an increase in dust storms in the Free State province between 2006 and 2016. The South African Weather Service reported large dust storms that swept across most parts of the country in October 2014 and January 2016. Dust plumes that 'turned skies red' in Alexander Bay (Northern Cape) during September 2019 were also visible from satellite images.

The big dust storm that swept across South Africa on 16 October 2014 originated in the Northern Cape, where strong winds occurred as a dry thunderstorm built up. High wind speeds in the Free State caused the soil to lift from large areas of dry, open farmland, forming a 'wall' of dust that swept through Gauteng and the Northwest province

Just as information about when and where dust storms occur is needed, data about how dust storms impact human health are also needed. After dust storms passed over the city of Kimberley in 2014 and 2016, the SAMRC conducted a pilot study looking at the impacts on health; however, the information in the study (as yet unpublished) is limited, and considerably more research is needed to fully understand how dust storms affect health in South Africa.

Further research and information are needed to inform evidence-based policies related to dust storms and health. In the meantime, it is important to communicate to the public how to protect themselves during dust storms. As a starting point, the SAMRC, in partnership with the National Department of Health and the Department of Forestry, Fisheries and the Environment, compiled basic health protection steps to take during dust storms.

Article prepared by Professor Angela Mathee and Dr Vusumusi Nkosi of the South African Medical Research Council.

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Isiphepho sezintuli sesidale umonakalo kwezolimo, salimaza izimpahla, sadunga umoya, saphazamisa ezokuthutha zomgwaqo kanye nezomoya, sabanga imiphumela engemihle kwezempilo, nokulahlaleka kwempilo imbala. Iningizimu ne Africa indawo ebanazo iziphepho zezintuli. Ulwazi ngisiphepho sezintuli luncane kubahlali baseningizimu Africa, mayelana nokumele bakwenze uma kufika isiphepho sezintuli, nolwazi ngokuthi obani abasencupheni yokuguliswa isiphepho sezintuli. Kusetsheziswa ucwaningo olwenziwe phesheya, nasekhaya eningizimu Africa, kwenziwe incwadi echaza ngalo lonke ulwazi olumayelana nesiphepho sezintuli, nokuthi ungazivikela kanjani wena nomndeni wakho.

Translated by Zamantimande Kunene, South African Medical Research Council

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