



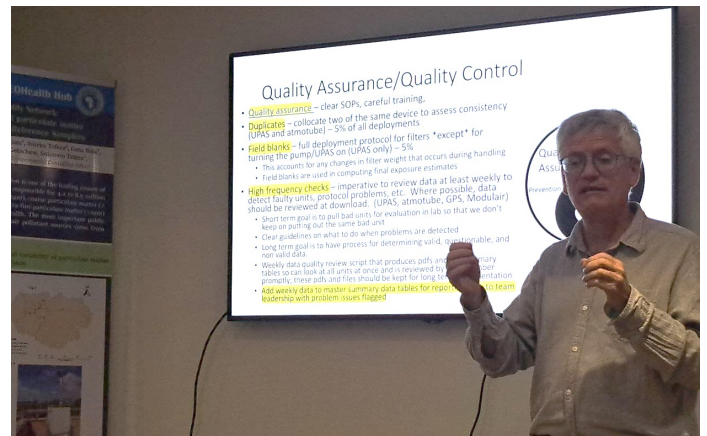
The Global Environmental and Occupational Health (GEOHealth) Hub for Eastern Africa

Quarterly Report: September-November 2023

Training Workshop on Air Pollution Exposure Monitoring

In anticipation of the commencement of Year 2 research projects in Ethiopia this fall, we organized a week-long training workshop at Addis Ababa University (AAU) from October 9-13. The workshop was led by Dr. Steven Chillrud and attended by the GEOHealth team at AAU. The workshop included:

- A review of study design for the person monitoring study.
- Training on the use of the new accelerometer and GPS loggers, including data management and analysis
- Data management and analysis of data collected from the Modulair-PM and Atmotube air quality monitors
- A review of focus group feedback on wearing a harness to hold the exposure monitors and GPS loggers
- Mini pilot to test wearing compliance of the harness carrying exposure devices and post-deployment focus group to gather feedback and issues on wearing the harness
- School visits for assessing placement of Modulair and E-sampler monitors



News feature - Kenya

During Africa Climate Week 2023, which took place in Nairobi, Kenya from September 4-8, the national newspaper featured research findings from GEOHealth Hub – Kenya on ambient air pollution impacts on health.

Monday, September 4, 2023 KSH60/00 (TSH:700 / USH:2,700/00 / RF:900/00) @ f w / NationAfrica | No. 21243 | www.nation.africa 000000

DAILY NATION

Africa Climate Summit

Climate: The grim reality



President William Ruto alights from an electric car he drove from State House to the KICC in the Nairobi CBD to attend yesterday's closing ceremony of the Youth Africa Climate Summit. The Africa Climate Summit starts today. PHOTO: IPICS

From rising temperatures to extreme weather events, our Earth is no longer safe—and even more so for the inhabitants of the Global South. Will the African and world leaders converging on Nairobi this week find solutions for these and other emerging crises? See Pages 2,3,4,5,6&7

EARLY CATCH

Young anti-plastic pollution champion to address summit
10-year-old Nigel Waweru, who was appointed by the Ministry of Environment, Climate Change and Forestry as its young ambassador in May, to address summit that will be attended by heads of state, including host President William Ruto / Page 5

FUNDING

Foreign banks fueling climate crisis in Africa
A new report details how banks outside the continent are funding projects that are using the wheels of the climate crisis / Page 3

NO-SHOW

Pakistan PM cancels planned visit to Kenya
Acting Pakistani Prime Minister Anwar-ul-Haq Kakar cancelled his three-day visit to Kenya five days after confirming he would attend the Africa Climate Change Summit / Page 7

PLUS CHANGING TIMES

Evolution of the climate crisis and why you should be concerned
Kenya's State of the Climate report paints a bleak future for agriculture in the face of climate change / Pages 4&5



Raila exit: Who's next in line? Why the opposition chief may be on his way out P.8



Arsenal gets the better of Man Utd in four-goal thriller P.34

National News

AFRICA CLIMATE SUMMIT 2023

DAILY NATION MONDAY, SEPTEMBER 4, 2023

Environmental crisis Current guidelines state that the annual average concentration of particulate matter (PM)

The air we breathe is slowly killing us, research reveals

Study revealed that pollution levels in Nairobi, Kampala and Addis Ababa were alarming

BY LEON LIDIGU

Did you know that dirty air is the second biggest cause of death in Africa, after non-communicable diseases? Last year, the results of a 27-month study conducted in Dagoretti, Embakasi, Kamukama, Kileleshwa, Langata, Makarara, Shauri Moyo, and Industrial Area revealed that pollution levels in Nairobi were 19 micrograms per cubic metre of air (µg/m³). This is relatively higher than the World Health Organisation's recommended daily standard.

Current guidelines state that the annual average concentration of particulate matter (PM_{2.5}) should not exceed five µg/m³. Average 24-hour exposures should not exceed 15 micrograms per cubic metre, and if they do they should not exceed four days a year.

The study, conducted by the University of Nairobi (UoN) in collaboration with Addis Ababa University, Makerere University, University of Brno, Columbia University, University of Southern California and Colorado School of Public Health, said a test conducted on schoolchildren aged 0-11 years found that at least 10 per cent had abnormal chest X-rays.

"The experts went on to say that this is the main reason for the increase in hospital admissions and deaths in hospitals as a result of household sources of pollution levels in Nairobi were 19 micrograms per cubic metre of air (µg/m³). This is relatively higher than the World Health Organisation's recommended daily standard.

It measures lung function, specifically the amount and/or speed of air that can be inhaled and exhaled, and is helpful in assessing breathing patterns that identify conditions such as asthma, pulmonary fibrosis, cystic fibrosis and chronic obstructive pulmonary disease (COPD) or chronic bronchitis.

Females were slightly more common than males, accounting for 54.3 per cent, while males accounted for 45.7 per cent of the

10 per cent of children with abnormal chest X-rays. A total of 1,000 children were involved in this research," said the UoN researcher, who is part of a consortium known as the Global Environmental and Occupational Health (Geo) Health Hub for Research and Training in Eastern Africa.

The study also found that pollution levels vary from region to region and that there is a strong link between pollution levels, climate change and human activities that can be controlled, such as traffic and waste burning.

"The air we breathe is very dirty and it is killing us. As the World Health Organisation research shows, the simple act of breathing is killing seven million people a year and harming billions more," said Prof Nicholas Ogunju, the UoN lead researcher, told Nation.

But what causes the dirty air? In most cases, air pollution is caused by human activities such as mining, construction, transport, industrial work, agriculture, smelting and burning of waste, but also by natural causes such as wind-blown dust," he said.

"Pollutants can be found in the



Addis Ababa 43 µg/m³. "Nairobi scores slightly better than the other regions because it has green spaces such as forests and parks that help clean the air. These green spaces include the Arboretum, City Park, Karura Forest, Ngara Forest and Nairobi National Park. They absorb an amazing amount of pollutants, but even within Nairobi there are variations. The Central Business District has the highest pollution levels (33 µg/m³) and the Karen area has the lowest (10 µg/m³)," Prof Ogunju said.

One thing that all East African cities have in common is that air quality is worst during the morning and evening rush hours when traffic is at its peak. Vehicles in traffic spew large amounts of fumes, mostly carbon dioxide, into the air.

"Exposure to high levels of air pollution has been shown to cause a variety of adverse health effects, including increased risk of respiratory infections, heart disease and lung cancer, aggravation of asthma, hospital admissions and even premature deaths related to heart and lung disease across cardiovascular problems including heart disease and stroke. Inflammatory effects on the heart (raising blood pressure) and worsening pre-existing heart conditions, reduced lung function, and increased risk of death with long-term exposure to polluted air."

"The burden of disease from air pollution in sub-Saharan Africa is among the highest in the world, with the rate of deaths related to air pollution 555 (deaths/100,000 people) much higher than the global average (35.4/100,000). In Kenya, over 5,000 people die prematurely every year due to ambient outdoor air pollution," he said. Dr Shajin Ramesh Malvi, a physician and diabetologist at the Limbs Tightest Eye Hospital Diabetes

Care Centre, agrees with Professor Ogunju.

"While more critical evaluation is needed, several studies have shown that an increase in air pollution is significantly associated with an increase in the number of people living with diabetes. Diabetes is a disorder where chronic inflammation leads to the inability of our endogenous insulin to work properly allowing sugar to circulate in the blood in excess amounts, leading to damage to most, if not all, organs," Dr Shajin told Nation.

RESIGNATION OF NON-EXECUTIVE DIRECTOR

The Board of Directors of Old Mutual Holdings PLC (the Company) hereby announces the resignation of Mr George Mwangi, as a non-executive director on the board with effect from 31 August 2023. Mr Mwangi joined the board on 17 May 2017 and during his term, he contributed significantly to the success of the Company. The Board of Directors and the Board of Directors of the Company are grateful to Mr Mwangi for his contribution to the Company's success and for his service to the Company and its stakeholders.

Mr George Mwangi
Group Company Secretary/Legal Counsel
1 September 2023

MASWEGO TECHNICAL TRAINING INSTITUTE

VACANCIES ADVERT

| SL. NO. | POSITION | TERM | AGE GAP | NUMBER OF VACANCIES |
|---------|----------|--------|---------|---------------------|
| 1 | LECTURER | 1 YEAR | 25-35 | 1 |
| 2 | LECTURER | 1 YEAR | 25-35 | 1 |
| 3 | LECTURER | 1 YEAR | 25-35 | 1 |
| 4 | LECTURER | 1 YEAR | 25-35 | 1 |
| 5 | LECTURER | 1 YEAR | 25-35 | 1 |
| 6 | LECTURER | 1 YEAR | 25-35 | 1 |
| 7 | LECTURER | 1 YEAR | 25-35 | 1 |
| 8 | LECTURER | 1 YEAR | 25-35 | 1 |
| 9 | LECTURER | 1 YEAR | 25-35 | 1 |
| 10 | LECTURER | 1 YEAR | 25-35 | 1 |

Interested candidates should submit a complete set of application documents including the following to the Human Resources Department of the Institute. The closing date for applications is 15th September 2023. Shortlisted candidates will be invited for an interview. For more information, please contact the Human Resources Department of the Institute. Email: hr@maswego.ac.ke

AT A GLANCE

Pollution rankings

Most polluted
The top ten most polluted cities in the world include Kuching, Malaysia (AQI 301), Kuala Lumpur, Malaysia (AQI 260), Dhaka in Bangladesh (AQI 255), Jakarta, Indonesia (AQI 250), Dubai, UAE (AQI 217), Doha, Qatar (AQI 212), Beijing, China (AQI 211), Kuwait (AQI 210), New Delhi, India (AQI 209) and Birmingham, UK with an AQI of 208.

Least polluted
Taipei with an AQI of 0, Salt Lake City and San Francisco with an AQI of 52, Oslo, Norway with an AQI of 15, Canberra, Melbourne and Denver with an AQI of 16, Moscow with an AQI of 17, Kochi with an AQI of 19, Helsinki with an AQI of 20.

Nairobi International Trade Fair Show

GEOHealth Hub-Kenya represented the University of Nairobi in the recent Nairobi International Trade Fair Show that took place in Nairobi from September 25 – October 1, 2023. The theme of the Fair Show was “Promoting, Climate Smart Agriculture and Trade Initiatives for Sustainable Economic Growth.” The team presented findings from their research to demonstrate “Air pollution Impacts on Climate Change” with a focus on the 2 major goals of Climate Smart Agriculture: 1) increasing productivity and income and 2) reducing and removing greenhouse gas emissions from the atmosphere. Their research project was recognized as one of the best projects in interpreting the show’s theme, demonstrating research and development as well as embracing information technology and communications.





Update on GEOHealth-sponsored graduate students

For Cycle II, the training opportunities have been further enhanced to include training at the graduate degree level (both Masters and Doctoral) at each of the three partner institutions. Graduate training is supported by the linked U01 grant and the degree is granted by the partner institution. Below is training progress on each student:

ETHIOPIA

Sisay Shine (PhD student)

- Title of dissertation: Examining Maternal Exposure to Fine Particulate Matter (PM2.5) and Pregnancy Outcomes in Rural Butajira, Ethiopia
- Sisay has finished coursework, written a research proposal, and made edits based on comments by supervisor, and preparing SOPs for the study

Genet Wale (MPH student)

- Title of thesis: Assessment of Occupational Heat Stress-Related Illness and Associated Factors among Workers in Secondary Aluminium Production Factory around Addis Ababa, Ethiopia
- Genet has completed data collection from both the secondary aluminium production factory and the water bottling factory. The data was collected by using a paper-based questionnaire, a MICROTHERM WBGT device, and an observation checklist.

KENYA

Noah Adera (PhD student)

- Title of dissertation: Time series Analysis of Ambient Air Quality and Cause-Specific Hospitalization and Mortality in Nairobi County
- Noah has finished writing the research proposal and it is currently under review by the supervisors

Joshua Nyamondo (MPH student)

- Title of thesis: Characterization, Seasonal Variation and Health Risk Assessment of Black Carbon in Nairobi City
- Joshua currently is taking coursework on proposal development and working on his research concept

UGANDA

Arnold Tigaiza (MPH student)

- Title of thesis: Household Air Pollution Exposure and Respiratory Health Among Primary School Children: A Case of Kampala City, Uganda
- Arnold is finalizing his thesis for his oral presentation. After the presentation, he will make necessary edits to finalize and submit his thesis. He will also work on a manuscript for submission to a peer-reviewed journal.



School workshop - Ethiopia

The team in Ethiopia held a workshop in October 2023 for the schools that participated in the children's health study in Cycle I. In total, 34 representatives attended from 20 schools. The purpose of the workshop was to communicate findings from the Cycle I study on air pollution and children's health and to provide an overview of Cycle II plans for the same study as well as the new mother's health study.



Feedback

Please email the Program Coordinator, Haruka Morita, at hm2487@cumc.columbia.edu with questions. For more information on the GEOHealth Hub, please visit our website: <https://geohealth-hub.org/>