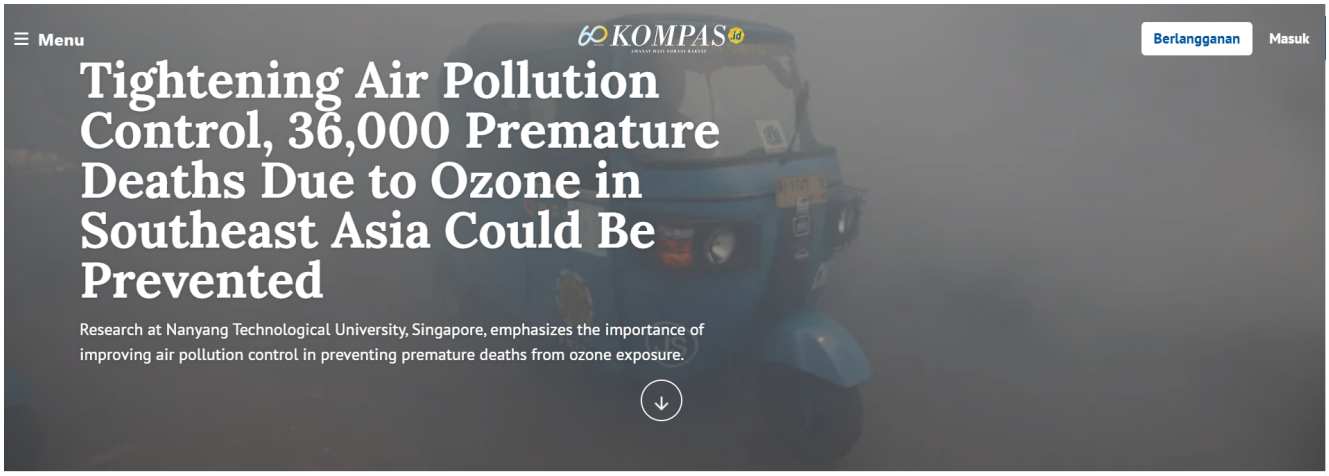

By Tatang Mulyana Sinaga
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JAKARTA, KOMPAS – Air pollution has become a serious issue faced by countries in Southeast Asia. Poor air quality is prone to trigger respiratory diseases. A recent study indicates that by tightening air pollution control in the region, 36,000 premature deaths due to ozone could be prevented by 2050.

The research involved scientists at Nanyang Technological University (NTU), Singapore. The research report has been published in the journal Environment International, May 2025.

According to researchers, if Southeast Asian countries adopt more environmentally friendly practices and implement strict emission reduction measures, the region could prevent up to 36,000 premature deaths due to ozone each year by 2050. However, if emissions remain high and fossil fuel consumption continues to rise, premature deaths due to ozone could potentially surge.

KOMPAS/WISNU WIDIANTORO

Motorcyclists were caught in traffic behind a bajaj while passing through Jalan Pintu Besar Selatan, West Jakarta, some time ago.

"Ozone depletion is not easy because it requires careful regulation of its precursors, namely nitrogen oxides and volatile organic compounds, rather than direct removal from the atmosphere. Tropical conditions in Southeast Asia also make ozone formation different from what happens in other parts of the world," said the study's lead author, Steve Yim, as reported by sciencedaily.com, Wednesday (5/28/2025).

Premature death due to ozone refers to deaths caused by exposure to harmful ground-level ozone. This pollutant exacerbates asthma, heart disease, and other chronic conditions, particularly among the elderly and vulnerable groups.

The NTU research team refers to pollution data from an international database that tracks emission sources. They utilize a detailed atmospheric model to understand how ozone concentrations can change under various pollution scenarios.

Researchers then estimated the potential number of premature deaths due to long-term ozone exposure. This estimation was carried out by combining pollution levels with health risk models, population data, and mortality rates from diseases.

Ozone is a major air pollutant that forms when nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. In urban environments, the primary sources of these emissions include motor vehicles, industrial activities, and power generation.

Exposure to increased ozone levels can lead to serious health issues, including respiratory diseases, cardiovascular diseases, and premature death. In 2018, pollution from fine particles and ozone in Southeast Asia was estimated to have caused 899,000 premature deaths.

"Ozone pollution is an escalating issue in the region, driven by increasing human activities related to economic development, particularly in the transportation and industrial sectors," said Yim.

KOMPAS/TOTOK WIJAYANTO

Haze pollution covers parts of Jakarta, May 14, 2024.

The study revealed that in major urban centers such as Singapore, Jakarta, Kuala Lumpur, Bangkok, and Ho Chi Minh, ozone levels are influenced by NOx and VOC. Therefore, it is crucial to reduce both pollutants simultaneously to effectively lower ozone concentrations in these cities.

Another author of the study, Joseph Sung, stated that ozone is an invisible but dangerous pollutant. "Our study shows that by taking decisive action now, we can significantly reduce the health burden in this region and improve air quality," he said.

Sung added that the research emphasizes the importance of strengthening air quality management in protecting public health. Enhancing air pollution control will safeguard the health of millions of people in Southeast Asia.

Credits

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