

Climate change boosts deadly smog

Buildings are engulfed by heavy smog in Urumqi. [Photo/Chinanews.com]

Global warming has boosted the frequency and severity of deadly air pollution peaks in northern China, according to a report in the Nature Climate Change journal.

“Climate change increases occurrences of weather conditions conducive to Beijing winter severe haze,” scientists involved in the research said.

In the capital and other major northern cities, the number of days each year with weather tailor-made for extreme smog rose from 45 to 50 in the period 1982-2015 compared to the previous three decades, a 10 percent jump, their study found.

The trend is set to worsen if warming continues unabated.

Persistent episodes of health-wrecking haze would become another 50 percent more frequent – and last nearly twice as long – during the second half of this century, the scientists found.

The main danger, experts agree, is particle pollution, especially toxic, microscopic flecks smaller than 2.5 micrometers in diameter – about 40 times thinner than a human hair.

The burning of coal, along with vehicle emissions and dust, are the main sources of these ultra-fine specks, which can cause severe respiratory problems and increase the risk of heart disease.

Small enough to enter human cells, they can also affect the immune and nervous systems.

In major cities across northern China, the number of days with “severe haze” jumped from 12 to 18 to 25 during the winters of 2014, 2015 and 2016 respectively.

Severe haze days happen when the concentration of small particles exceeds 150 micrograms per cubic meter of air.

In January this year, a thick blanket of haze settled over the Beijing-Tianjin basin – home to more than 100 million people – for eight consecutive days.

For several days running, the density of particles 2.5 micrometers or less was higher than 500 micrograms per cubic meter, more than three times the World Health Organization’s danger threshold.

“I would rank air pollution as the No. 1 or No. 2 concern of ordinary people in northern cities in China,” said co-author Liao Hong, a researcher at Nanjing University’s School of Environmental Science and Engineering.

A report by China's environment ministry last year showed that 265 of the country's 338 biggest cities failed to meet new health standards for small-particle pollution in 2015.

The perfect storm of geographic and weather conditions that favor lung-searing smog include sharp temperature differences between the lower and upper atmosphere, faint winds, and certain patterns of atmospheric flow.

The researchers, led by Cai Wenju of the Qingdao National Laboratory for Marine Science and Technology, combined these elements to create a "haze weather index" that they matched against 60 years of weather records.

Averaging across 15 climate models, they also calculated a sharp increase in the number of smog-inducing days from 2050 to 2100.

"In spite of stringent emission controls, severe haze days in Beijing have continued to increase, as clearly seen over the past three winters," said Zhang Renhe, a researcher at Fudan University. "A global effort to slow down global warming is also urgently needed to decrease the risk of heavy air pollution in Beijing."