Air pollution in London hit record levels on Thursday due to a combination of traffic fumes, relatively still weather and an influx of dirty air from the north of England and northern France. Poor conditions are affecting a swath of the country as far north as Leeds and York.

Official monitoring stations in the capital show that particles, nitrogen dioxide, sulphur dioxide and other pollutants have reached levels not recorded since stringent new measurements were introduced in 2008. Pollution levels in London are even higher than last Easter, when the government was forced to issue a smog alert. The record high will worry officials preparing for the arrival of the world’s best athletes and hundreds of thousands of spectators for the Olympics in four months time.

Health advice from the Department for Environment, Food and Rural Affairs (Defra) says that adults and children with lung problems, adults with heart problems and all older people should not take any “strenuous physical activity” while pollution is at the recorded levels. The general population is advised to reduce exercise too.

Recirculated dirty air from Europe and the north of England is partly to blame, along with a lack of wind, said Gary Fuller, senior lecturer in air quality measurement at King’s College London. "Still conditions mean that the pollution from the cars and lorries on the roads today is simply not blowing away. On top of this, the air over England today was in northern France yesterday and in northern England on Tuesday where it picked up a lot of air pollution from coal burning industries, domestic heating and traffic."

He added that poor air quality was affecting as far north as Leeds and York, and his forecasts suggested the high levels of pollution would continue into tomorrow.
The Met Office said that winds would be light on Friday morning but would be picking up by lunchtime with gusty winds of 25mph, followed by further winds on Saturday which should bring pollution levels down.

Simon Birkett, director of the Clean Air in London campaign, said: "The failure by the mayor to warn Londoners about five smog episodes in a row proves he is desperate to avoid the air pollution issue ahead of the mayoral election.

"It's clear the mayor, who would rather suppress pollution in front of official air quality monitoring stations than save lives, is more concerned about getting re-elected than he is about those he represents. This may be the biggest public health fraud for a generation."

This month, a report suggested that the 2012 Olympics would have no significant impact on air quality in London. Changes to road management during the Games are likely to have "broadly neutral impact on air quality", Transport for London said.

Since December 2008, air quality stations in London have been monitoring smaller particles called PM2.5s, which are able to enter the bloodstream more easily and cause more respiratory damage than larger particles, such as PM10s. Fuller said the levels on Thursday were the highest since the new regime was introduced.

A Defra spokeswoman said: "We want to keep improving air quality and reduce the impact it can have on human health and the environment. Our air quality has improved significantly in recent decades and is now generally very good, and almost all of the UK meets EU air quality limits for all pollutants.

"There are some limited areas where air pollution remains an issue, but that's being dealt with by the air quality plans, which set out all the important work being done at national, regional and local levels to make sure we meet EU limits as soon as we can."

Last month, the environment secretary, Caroline Spelman, was criticised by an influential group of MPs for rejecting their recommendations to cut pollution on the grounds that it was too costly. Poor air quality has been linked to nearly one in five deaths a year in London. The capital's poor air quality, caused largely by traffic, has seen the UK facing £300m in fines for breaching EU targets. The government has successfully lobbied Europe to push back the deadline for meeting the targets.

• This article was amended on 16 March 2012. The original referred to nitrous oxide instead of nitrogen dioxide. This has been corrected.