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Prepare your barbeque properly this summer, warn scientists

April 23 2013, by Alex Peel

As we break free from the shackles of an unusually long winter, thoughts may be turning towards that first barbecue of the summer. But before we lay down the season's first slab of meat, scientists are urging us to make sure that the smoke and flames have calmed and the coals are glowing red.

New research, published in *Food Chemistry*, shows that chargrilling meat over badly prepared coal may contaminate it with dangerous levels of chemicals that can cause cancer.

'Fat drips down as you cook the meat, lands on the coals, and produces smoke,' says Dr Mustafa Ozel of the University of York, one of the study's authors. 'The smoke then contaminates the meat with carcinogenic nitrosamine chemicals,'

'If you're going to barbecue meat, make sure the charcoal is ready and has stopped smoking, choose low fat meat and make sure it's cooked, but don't cook it for too long.'

The research is the result of a long-running collaboration between atmospheric chemists and food scientists at the University of York.

The team, led by Professor Fahrettin Gogus of the University of Gaziantep, used technology originally developed for measuring chemicals in the atmosphere to measure concentrations of six carcinogenic compounds in lamb grilled over ready and unready charcoal.

They find a substantial increase in carcinogens in meat cooked over charcoal that is still smoking and flaming. Meat with higher fat content, and meat that was cooked for longer, also contained more of the chemicals.

But Professor Ally Lewis, of NERC's National Centre for Atmospheric Science, says more work would be needed to draw relationships between chemical levels in the meat and real health effects.

'You'd need to do work on people's real dietary intake to see what effect the exposure might be having,' he says. 'But, using this technology that was developed for atmospheric chemistry, we've been able to identify these specific chemicals in food for the first time.'

'It shows just how valuable mixing researchers from different disciplines in the same lab can be, and the enormous potential for wider applications of environmental research.'

More information: Kocak, D. et al. Determination of volatile nitrosamines in grilled lamb and vegetables using comprehensive gas

chromatography - Nitrogen chemiluminescence detection, *Food Chemistry*, 2012.

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