

Particulate matter: short-term but high-impact exposure at public gathering in Germany

Dear editor,

Particulate matter (PM) air pollution is increasingly regarded as a global health threat¹ and China in particular is frequently criticised for having problems with haze and air pollution.² A systematic analysis of the global burden of disease in 2010 described a shift of risk factors away from communicable diseases in children towards non-communicable diseases in adults. Ambient PM air pollution was specified as a key, new risk factor in the global disease burden.³

While the effects of long-term exposure to PM air pollution have been discussed extensively, the effects of short-term exposure to high concentrations of PM



Figure 1 (A) Three pictures of the detonating AFE Tower in Frankfurt am Main, 2 February 2014. (B) The graph documents the concentration of PM₁₀, PM_{2.5} and PM₁ in $\mu\text{g}/\text{m}^3$ for several minutes during the collapse of the building. PM, particulate matter.

are only slowly becoming the focus of public interest and should not be underestimated since there is growing evidence for adverse health effects of short-term exposure to PM_{2.5}. A systematic review and meta-analysis recently published in *Thorax* on 4 April 2014 is devoted to this issue.⁴ The harmful health effects of short-term high-impact exposure to PM include (among others) several respiratory symptoms and cardiovascular morbidity and mortality. An example of persistent respiratory damage following acute high-intensity exposure to PM is the case of a substantial proportion of fire fighters and emergency medical service workers who had never smoked and were acutely exposed to World Trade Centre dust between 11 September and 24 September 2001. They showed large declines in FEV₁ in the first year without recovery over the next 6 years.⁵

On 2 February 2014, a 114 m tall skyscraper was detonated in the inner city of Frankfurt am Main. It was the highest building ever brought to implosion in Europe. Spectators were invited to follow this in VIP lounges only 250 m from the site of detonation. We measured PM₁₀ concentrations as high as 54 000 µg/m³ and PM_{2.5} concentrations up to 13 000 µg/m³ for about 400 s within the spectator area (figure 1).

In the light of this, the abandonment of the plan to blow up five 30-storey Red Road residential blocks in north Glasgow as part of the 2014 Commonwealth Games opening ceremony on 23 July—officially for ‘safety’ reasons—is to be welcomed. In consideration of the known health hazards, building implosions in urban communities should be generally avoided.

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