Health impact from a major polluting event.

At the end of the Gulf War in 1991, more than 700 oil wells were deliberately set on fire, and it took many months for these to be brought under control. That led to a period of many months in which the population of Kuwait (in particular) was exposed to heavy pollution arising from the fires.

While the fires were extinguished successfully, the long term impact on the health of the population was and is uncertain. Some of the key uncertainties are:

* The geographical distribution of particulates arising from the oil fires – the density of particulates could vary widely even within local neighbourhoods
* The exposure of the population depends on how much they move between different areas, so is influenced by the degree of mobility of different parts of the population, which was especially the case in the aftermath of the war.
* There is uncertainty about the effect of exposure to particulates on overall mortality in the population.

A major study took place to consider these issues, and as a part of that a major expert judgement study was carried out.

The expert judgement study made use of six European air pollution experts who were asked to provide quantitative judgements in the form of quantile assessments (a partial specification of a probability distribution in each case). Some of these questions related directly to the effects of the fires on the civilian population. The experts are asked to give a narrative justification for the reasoning behind their assessment. In some of the cases, the questions were about situations in which measured data was available to the analysts but not known to the experts (such questions are called “seed” or “calibration” questions). This enabled a judgement to be made about the ability of the experts to assess uncertainty, which is summarized through a weighting given to each expert. The overall probability assessment is made up by combining the individual expert assessments weighted by their individual scores.

The data collected from the different experts for the each of the questions can be found in the file. This shows where there is agreement or disagreement between experts, and also enables us to judge individual expert performance.

For further reading about this case, look at the following papers from the scientific literature:

Cooke, Roger M. Wilson,A.M., Tuomisto,J.T. Morales,O. Tainio,M. and Evans, J.S.. (2007) A Probabilistic Characterization of the Relationship Between Fine Particulate Matter and Mortality: Elicitation of European Experts. Environmental Science and Technology 2007 Sep 15;41(18): pp 6598-6605.

Tuomisto JT, Wilson A, Cooke RM, Tainio M, Evans J.S.(2005) "Mortality in Kuwait due to PM from oil fires after the Gulf War: Combining expert elicitation assessments" (2005) Epidemiology, Volume 16 (5) September 2005 p. S74-S75

Evans JS, Wilson A, Tuomisto JT, Tainio M, Cooke RM (2005) "What risk assessment can tell us about the mortality impacts of the Kuwaiti oil fires" Epidemiology, Volume 16 {5} September 2005 p.S137-S138