

There's a 90 per cent chance we won't panic

Whether it's falling satellites or earthquakes, the public deserve to be told about the risks

David Spiegelhalter



Now that the rogue US satellite has crashed into the Pacific we can all come out from under our beds.

The biggest bit of the satellite was about the weight of an adult gorilla, although not as soft, and travelled at 100mph, so it sounds rather ominous, but people only take up one 80,000th of the Earth's surface, so it would be more than an unlucky day if anyone had been hit. Forty tonnes of debris got scattered over mainland USA after the Columbia shuttle disaster and nobody was injured, although Nasa afterwards concluded there had been about a one in four chance of casualties.

Stuff as big as this satellite plops down to Earth most years without any publicity, but Nasa's policy of openness about the potential risks this time meant that there was international interest. So can the

public be trusted to react reasonably with full disclosure, or should they just be reassured by the experts? This is the basis of a crucial trial that started in Italy last week in which six scientists and a government official are accused of manslaughter following the earthquake in L'Aquila in 2009.

The issue focuses on a crucial meeting of the earthquake experts on March 31, 2009. In the preceding weeks there had been many small shocks, and a local amateur with homemade equipment had been predicting a major earthquake. The meeting concluded that "there is no reason to say that a sequence of small magnitude events can be considered a sure precursor of a strong event". But at a press conference afterwards the official apparently translated this into the reassuring statements that there was "no danger" and that the scientific community assured him that it was a "favourable situation". What followed has the air of a scripted tragedy.

At 11pm on April 5, 2009, there was a strong shock, and families had to decide whether to stay indoors or spend the night out in the town squares, the traditional response to tremors. Those who heeded the "scientific" reassurances remained indoors, and 309 people were killed in

their beds when the devastating earthquake struck at 3.30am. The scientists are not being accused of failing to predict the earthquake. Instead, the trial is focusing on what was communicated to the public.

Who else might be guilty of issuing reassuring statements? Michael Fish jovially discounted the possibility of a hurricane in October 1987, and the ensuing storm killed 18 people. In 1990, John Gummer, the Agriculture Minister at the time, was similarly

In L'Aquila, 309 died in the quake after heeding the 'reassurances'

reassuring about the safety of British beef when he tried to feed his daughter a burger. More than 100 people have now died of variant CJD in the UK.

Of course there's a difficult balance to be struck. For every unheeded warning about a sub-prime crisis or cod depletion, there's an exaggerated claim about the potential dangers of saccharin or the Millennium bug.

And language is vital, in particular regarding the "framing" of the risk. The L'Aquila risk was about 100 times

greater than normal for the town, but there was still only a 2 per cent chance of an imminent major earthquake. Similarly, a heart operation has about a 2 per cent mortality rate, but if a surgeon tells you there is a 98 per cent survival rate, it sounds better. UK cardiac surgery uses survival rates, so that a surgeon with 96 per cent survival still sounds good, whereas the US uses mortality rates, so the same surgeon would be reported with a 4 per cent mortality rate, double the average. To avoid these issues, both the chances of something bad happening and of it not happening should be given.

So although the Italian prosecution seems harsh, it's a salutary warning that the public should be treated with respect, given full information and guidance rather than reassurances and have their concerns taken seriously. When being trained to work on a helpline, I was taught of the dangers of premature reassurance, since telling someone that it was all going to be OK before they had a chance to work through their anxieties closed down the conversation. Scientists, too, need to learn to listen as well as talk.

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