

Interactive comment on “Comment on “Global risk of radioactive fallout after major nuclear reactor accidents” by J. Lelieveld et al. (2012)” by J. Lelieveld et al.

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Principal question to the editors about the questions posed here: How could this manuscript ever become a paper as a collection of Q&A acceptable for publication?

my comments on

Q1: Authors do not consider the fact that radioactive emissions from Chernobyl and from Fukushima were essentially/fundamentally different: Chernobyl, in a first blow, did send out iodine, and the both caesium isotopes were dissipated considerably later after the fire of the carbon core had developed to a fire storm. In Fukushima nearly no iodine was emitted because of the different cause and sequence of the reactor

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failure. It is not a problem, as the authors state, that not enough reliable data have been published; the fundamental differences in both accidents are well documented.

Q3: Form the data of both reactor accidents it is evident that the contamination occurred only on a very shallow surface layer. The iodine of Chernobyl was absorbed by the wax layers of agricultural crops, ie. above the ground; those plants were plowed away (at least in Germany) and the radioactivity diminished by natural decay. The caesium however penetrated up to about 60 cm into the ground. On top of all, in certain forest areas it was enriched in specific mushrooms. In affected regions in Germany, it is still present in some truffles which are a delicacy for wild boar and the meat is under strict control before permitted on the market. 60 m depth is not reasonable. ('m', a typing error?)

Q9: It is a fundamental deficiency of this paper that the Fukushima event is considered as three statistically independent accidents. The authors argue that the three core melts were 'independent because the reactor safety provisions must be independent'. However, everybody else, but not the authors, know that the safety provisions at Fukushima were not at all independent and sufficient: two reactor blocks shared a single power supply unit for emergency situation consisting of two power generators in a common building with a single connecting channel to both reactors; basic assumption of emergency power supply had been that neighbouring reactors would continue to operate and to supply electricity to the other reactors in case of failures. Authors mention that the tsunami can be considered as a single cause. But claiming that safety provisions 'MUST' be independent does never create the real situation at the Fukushima facilities. No excuse, that the results would be only off by a factor of two; the argumentation by the authors proves that they do not know what they are talking about. And there are more fundamental flaws in the statistical part of this paper.

Furthermore, it is a fairly naive assumption that such statistical conclusion can be founded on just two (or even four) events. Authors do not explain their rationale for their assumption and justification. And a proof of the contrary is the conclusion by any

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insurance company not to accept the risks of major reactor accidents as the risk cannot be estimated reliably (in order to calculate the insurance premium/fees).

The statistical approach is of layman-kind. Statistics has developed professional tools for coping with very rare events.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 19303, 2012.