

Response to criticism of TV Case Study using the Fire-LCA model

A number of criticisms have been raised to the historic application of the Fire-LCA model to the TV Case Study. The main criticisms have been couched in approximately the same terms in different media. Therefore, they have been listed and answered below in an effort to cast some light on the issue:

1. *The study(s) is based on a report that is so obscure it is published only in Swedish.*

The study is actually a meta-analysis of statistics from a variety of sources. It is true, however, that the statistical model for TV fires is based mainly on two studies supplemented by US statistics from the NFPA:

- Elbränder – statistik och verklighet (Elsäkerhetsverket) (1997)
- TV Fires (Europe) conducted by Sambrook Research International for the UK Department of Trade and Industry (1996)

The first study is by a Swedish government organization, Swedish Electrical Safety Board and, as all governmental organizations in Sweden, **everything they write is published in Swedish** which is the national language of Sweden. In the 90's it was uncommon for government organisations to translate their publications other than as an exception. These days many documents are also published in English by such agencies but not everything and there is clearly no requirement that documents be published in English. It is somewhat parochial from a European point of view, with many languages in a small area to label anything not published in English as "obscure".

The full statistical model was published separately in a peer reviewed paper in Fire and Materials (Fire Mater., 24, 52-60 (2000)) early in the project, i.e. before the full SP report was published, which is why the statistical publication does not refer to the SP report for the TV Case Study (SP Report 2000:13). The full details of the statistical model have, therefore, undergone peer review before being implemented into the Fire-LCA model. The criticism that full peer review is not possible given that an underlying reference was only available in Swedish is again somewhat parochial.

2. *The study is hard to find, the Swedish National Library being the only place it can be obtained!*

In this context the study which is "hard to find" is the Swedish Electrical Safety Board study cited above. All the SP reports are available to be downloaded from the internet (and all are in English): www.sp.se.

The study was easily obtained when the research was first conducted in the late 90's. It was ordered from the Electrical Safety Board at the time and numerous discussions and email correspondence with the author of the report took place at the time. The author was given a copy of the Fire and Materials article and asked to comment but had nothing to add at the time. As the report is now 15 years old it is no longer on the active files of the Board which is why it was only available from the National Library.

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3. *The interpretation of the Swedish Electrical Safety Board study was not checked with the author of the study*

The author of the Fire-LCA TV Study, Dr Margaret Simonson McNamee had numerous discussions with the author of the Swedish Electrical Safety Board study and he was provided with a copy of the Fire and Material article for comment and a subsequent conference publication concerning the initial findings of the LCA study (Flame Retardants 2000). The author of the Swedish Electrical Safety Board study was at the time happy that his work was being applied in a research project. The dialogue took place 15 years ago and he cannot be faulted if he has no specific recollection of it.

4. *The SP study is based on 15 year old data*

The original work began in 1995 (definition of a conceptual model, SP Report 1998:25). The TV Case study, where the statistical model was used, was started 1998. The National Electrical Safety Board study came out 1997 and the DTI (UK) work came out 1996. Both of those studies were fresh when the TV Case Study of the Fire-LCA model was conducted!

5. *The proof that flame retardants work is based on 8 TV fires*

Firstly, the Swedish Electrical Safety Board data was used to define the model for non-flame retarded TVs so strictly it says nothing specific about how well flame retardants work. Rather it provides a baseline of fire frequency in the absence of flame retardants.

Secondly, the total number of TV fires in the Swedish study is actually 31, of which 8 were classified as electrical fires according to the Electrical Safety Board's narrow definition of an electrical fire. As the SP work included all TV fires (in a number of different categories) it included all 31 TV fires investigated in the Swedish Electrical Safety Board study.

In fact, the SP model for the frequency of TV fires not containing flame retardants is based on the national numbers proposed by the Swedish Electrical Safety Board which correspond to approximately 600 TV fires for all of Sweden that cause damage outside the TV and a further 1700 electrical fires where the fire does not escape the TV housing (not actually defined as an electrical fire by the National Electrical Safety Board). Thus, strictly speaking the SP study is based on the Electrical Safety Board's proposed national numbers totalling approximately 2300 TV fires although these numbers are an extrapolation from 31 fires, which do not constitute a statistical sample. The Swedish Electrical Safety Board endeavoured to deal with this issue by proposing two different models for the extrapolation. As both proposed models gave similar results they concluded that the extrapolation was valid. Clearly, it would be better to have truly national data on which to base the results but such data was not and is not available.

It should also be noted that the Fire Model in the Fire-LCA application was based on data from a number of different sources and a full explanation of how the model was defined is given in the Fire and Materials article cited under point 1. This article contains original references to all data sets.

Additional questions can be posed to Margaret.McNamee@sp.se.