First of all, a little correction to my title. What I will write about is not a real scientific news, but rather a scientifically inaccurate misinterpretation of an actual technical accident.

A small French settlement, Marcoule became well-known worldwide last September. The French and English TV channels broke their broadcasts to report the news of the accident that happened that morning. News portals also wrote about it almost immediately, for example BBC wrote: France nuclear: Marcoule site explosion kills one. In the early afternoon the first news and articles were published in the Hungarian online media as well, the first ones mentioned an explosion in a nuclear plant, and a possible radioactive cloud headed for Hungary.

Let’s see where the accident really happened and what has really happened?

The Marcoule nuclear site is located in the Gard department of France, in south-east France. The Marcoule nuclear facility does not house any active nuclear reactors. There were three first generation French UNGG reactors operational, all of which has been shut down already. And there was also a fast breeder reactor, the Phenix prototype, which was operational from 1974 until 2009. This is the largest scientific and industrial site in that region. According to the official news website of the International Atomic Energy Agency (IAEA), the accident on 12th September 2011 in fact happened at the CENTRACO nuclear installation located in Codolet, adjacent to but separate from the Marcoule nuclear site [1].

What really happened?

The blast occurred in the morning when a furnace exploded at the plant that treats nuclear waste. A fire broke out after the explosion, but it has been brought under control. “According to initial information, the explosion happened in an oven used to melt radioactive metallic waste of little and very little radioactivity,” said the Nuclear Safety Authority in a statement [2]. One person died, while another was seriously injured. Three more were hospitalised as well with less severe injuries. As mentioned above, the Hungarian online media wrote about an explosion in a nuclear plant, and a cloud headed for Hungary, which has very little in common with what actually happened.

Why are we so sensitive for that kind of news?

Mainly because of Chernobyl. The International Atomic Energy Agency (IAEA) introduced a scale in 1990, the so called INES Scale – the International Nuclear and Radiological Event
Scale – in order to enable prompt communication of safety-significant information in case of nuclear accidents. The scale is intended to be logarithmic, similar to the scale used to describe the comparative magnitude of earthquakes.

There have only been two events to date which were rated level 7 (major accident) on the INES Scale: the first was the Chernobyl accident in 1986, the second was the Fukushima accident in March 2011.

**Chernobyl and how a radioactive cloud moves**

Even if this accident was closer to Hungary, our country was lucky, because it got less radioactive fallout than some Western European countries. Contamination from the Chernobyl accident was scattered irregularly depending on weather conditions, and the main part of the radioactive fallout avoided us.

In 2005 the IRSN – Institute for Radiological Protection and Nuclear Safety – modelled the atmospheric dispersion of caesium-137 across Europe following the Chernobyl accident. As we can see from the simulation, the radioactive cloud does not tend to move in a certain direction, but has a rather unpredictable, swirling motion. Therefore it cannot be stated that the cloud moves in a definite direction.

After the accident of Chernobyl, it was communicated that such a thing cannot happen again, but 25 years later another severe disaster occurred: Fukushima. The earthquake in 2011, the following tsunami and the sequential damages (and explosions) done to the Fukushima nuclear power plant, presented a serious danger again. On many occasions it was referred to as a “second Chernobyl”.

It was just half a year after Fukushima, when we heard the news about Marcoule, that an explosion happened in a nuclear reactor.

And another reason, why we (Hungarians) are so sensitive for this kind of news: We also have a nuclear power plant in Hungary, the Paks Nuclear Power Plant. This is the first and only operating nuclear power plant in Hungary, it’s operational since 1982 and consists of 4 reactors. Altogether these produce more than 40 percent of the electrical power generated in the country. They are planning new blocks and the extension of service lifespan.

What’s more, we too had an accident in 2003 (an INES level 3 event). Actually, the accident that happened at the Paks nuclear power plant did not occur during the normal operation but was due to a technical problem during maintenance. Although, the accident didn’t happen inside the reactor, the common people don’t necessarily understand the difference.

**Are nuclear reactors the same? Of course not!**

There are different types of nuclear reactors:

– RBMK a class of graphite-moderated water cooled nuclear power reactor, a generation II reactor, built up to the end of the 1990s (Chernobyl consisted of 4 reactors of type RBMK-1000)

– BWR boiling water reactor, uses demineralised water as a coolant and neutron moderator (Fukushima Dai-ichi Nuclear Power Plant consisted of 6 BWRs)
– PWR pressurised water reactor (Paks Nuclear Power Plant, Hungary consists of 4 PWRs)
– and many more types ...

But for the public all nuclear reactors of different types and of different security levels are only the same: a hazardous nuclear reactor, which is nearly synonym of “atomic bomb”.

Considering the case of the Marcoule accident, and its interpretation in the Hungarian online media, we can see several serious problems, like: translation faults; misuses of technical terms; contradiction between the title, the text of the weblink, the keywords, the header and the content; taking information from other sites uncritically; mixing the information from different sources and from different dates and times, not separating them appropriately; not updating the article in time and in an adequate manner; etc. The following link shows some examples for these problems [4].

Some final thoughts

This is not a unique case. It is not unique in regard of the subject, the country and the different news portals. It’s very likely that cases such as these have occurred many times on many portals and probably will again. The reason I felt it important to present this, is to notice these problems, inconsistencies and to speak about the arising difficulties.

There are situations, when we don’t have at our disposal all-encompassing information on the details. For example, when the location of an accident is inaccessible (at that moment), or we don’t know where it exactly happened, what exactly happened. We must find the balance between being as fast and detailed as we can and creating uncalled-for panic.

Nowadays it can be of great importance for public information communication to be as factual, detailed, professional and free of unfounded (not necessarily sensationalist) presumptions as possible. It is just as important that the occasional mistakes are corrected appropriately with a clear indication that there has been a correction. In addition, it doesn’t matter if the reason is negligence, incompetence or to increase the attendance (of the site), it is ethically impermissible to allow misleading, sensationalist pieces of information abusing the reader’s personal or territorial involvements to see the day of light and spread in the media.

These inaccuracies – depending on the subject – can create social tension, fear and panic; if not, they will discredit at least the given medium and the information communication. If they are not rectified clearly, pointing out what were the errors, what were the presumptions about a possible danger that proved to be wrong, they can be the cause of tension between people who read two different versions of an article, or even compel a reader to accuse the portal with the concealment of facts. Of course concealing facts can be as dangerous as providing information without sufficient background knowledge.

What I hold important is to highlight the phenomenon, the practices with which these sites are written and re-written, and to emphasize that this can be problematic in a number of different ways.
References


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