WARNINGS
BRIEFING NOTE

FALSE ALARMS AND NEAR MISSES

Key Overview

- **Communication**: Uncertainty information should be a part of every warning.
- **Transparency**: The public needs to know the reasons for near misses and false alarms.
- **Trust**: A trusted message and messenger mitigates warning complacency.

State of the Art

False Alarm: An event that does not occur when a warning is issued.

Near Miss: An event without a warning that could have caused harm, but did not.

The effect of false alarms and near misses on public trust has long been thought to be that when people become sceptical of warnings, they may become desensitised to the risk, thereby endangering themselves even more [1]. This is a concern especially for weather agencies for whom accurate forecasting of weather is a core tenet of their mandate. Despite advances in technology and the vast amount of data available to weather agencies, weather forecasts are rarely 100 percent certain and, being probabilistic, are not meant to be predictions. Social norms also play a role. After responding to a false alarm, people can feel that they have lost face and were foolish for believing the warning, presuming that their preparatory and anticipatory actions were wasted [2].

Core Needs

The core needs for false alarms and near misses is to resolve the confusion between the terms and to increase the transparency of why some warnings result in false alarms. They are key because false alarms and near misses are thought to hinder public anticipatory action and warning response, such as evacuation and sheltering. Research suggests that the cumulative experience of false alarms leads to subsequent warnings on occasion being reinterpreted as benign [3,4]. Agencies tasked with keeping the public safe are aware that false alarms can undermine credibility and so want to reduce them, aiming to tread that fine line between over-warning and under-warning. This problem is not just confined to authorities. The public can sometimes find it difficult to distinguish between a false alarm and a near miss, or can credit a near miss as a false alarm and vice versa. Research shows that there is a wide variation in public understandings of a false alarm, and confusion as to what this term means [3].

Guidance

- Define false alarms e.g. false alarm ratios and rates, for the warning system as part of the system's performance metrics.
- Use uncertainty information routinely in hazard warnings, communicated so that a wide variety of public can understand them.
- Enhance credibility and public engagement by explaining why near misses and false alarms occur.
- Tell the public what is *not* known about a possible threat as well as what is known and what might happen.

False alarms and near misses may serve to improve public hazard awareness and risk appraisal, if they are used as an education opportunity for the public and authorities [4].

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Hurricane Sandy

On 29 October 2012, Hurricane Sandy made landfall on the northeastern United States as the largest Atlantic hurricane on record, spanning 1,800 kilometres with winds of up to 130 kilometres per hour. It produced a storm surge of up to 4 metres and killed 285 people across seven countries. In a pre-landfall news article titled 'Frankenstorm: Threat Launches Mass Evacuations', a comment by a resident in the hurricane's path shows why emergency authorities are right to be wary of false alarms and near misses in case people become desensitised to warnings:

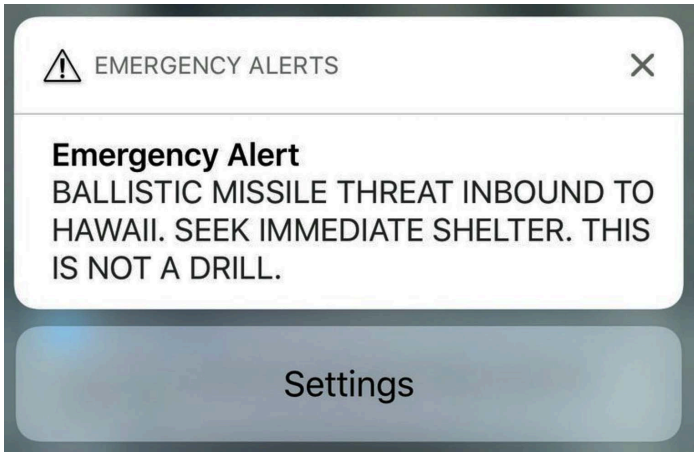
> *"But you know how many times they tell you, 'This is it, it's really coming and it's really the big one' and it turns out not to be? I'm afraid people will tune out because of all the false alarms before, and the time you need to take it seriously, you won't."* [5]

Concerned about public scepticism and inaction, the United States National Weather Service included this statement as one of five key messages in their strongly worded warning to residents directly in the path of Hurricane Sandy: **IF YOU THINK THE STORM IS OVER-HYPED AND EXAGGERATED, PLEASE ERR ON THE SIDE OF CAUTION.**

Properly constructed warnings are not falsified when the risk does not materialise, any more than the failure of a house to catch fire negates the purchase of fire insurance.

False Alarm and Near Miss Considerations

- Public response to a single false alarm is different to repeated false alarms. If the public understands why a false alarm has happened, subsequent response (to another warning) will usually not decrease.
- False alarm and near miss post-event information can make people more willing to accept repeated false alarms and near misses, because it has been contextualised.
- Transparency from agencies can help mitigate scepticism and enhance trust in both the message and message source.
- Hazards with a high false alarm ratio have been shown to be less effective in triggering anticipatory action over time [7].



An extraordinary false alarm issued across Hawai'i on January 13, 2018. In response, people "sought additional information and cues about the potential threat, observed others engaging in milling, with some accounts of fatalism (during the event) and lingering symptoms associated with traumatic stress (after the event)" [6].

References

[1] Breznitz, S. 1984. Cry wolf: The psychology of false alarms. London: Lawrence Erlbaum Associates.
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[5] USNews. 2012. 'Frankenstorm' Threat Launches Mass Evacuations (cnbc.com)
[6] DeYoung, S.E., Sutton, J.N., Farmer, A.K., Neal, D., and Nichols, K.A. 2019. "Death was not in the agenda for the day": Emotions, behavioral reactions, and perceptions in response to the 2018 Hawaii Wireless Emergency Alert. International Journal of Disaster Risk Reduction, 36, article 101078.
[7] Barnes, R.B., Gruntfest, E.C., Hayden, M.H., Schultz, D.M., and Benight, C. 2007. False alarms and close calls: A conceptual model of warning accuracy. Weather & Forecasting, 22, 1140-1145.

Author: Brenda Mackie