

Food Trend “Dragon Breath”: Cool Snack - “Burnt” Mouth

Communication No 055/2020 from the BfR of 25 November 2020

Due to its low temperature of -196 °C , liquid nitrogen is a popular coolant in numerous industries – and, amongst other things, it is also used for this purpose in industrial food production and processing. Its use for the production of the food trend “*dragon breath*” has recently come to light. Food is frozen with liquid nitrogen at kiosks, for example, and given loose to consumers. This should make your own breath look like the eponymous “*dragon breath*” during consumption – a showy effect that can be attributed to the low temperature of the liquid nitrogen.

The German Federal Institute for Risk Assessment (BfR) points out that due to the extreme cold, health risks are possible when consuming such “dragon breath” products. In addition to injuries to the tongue or the oral mucosa – also known as freezer burn or cold burn – damage to the teeth can occur.

Several German federal states (“Laender”) have reported that, for example, “smoke pops” are offered for consumption in paper cups with wooden sticks. “Smoke pops” are corn flips that are filled into paper cups for delivery to consumers and then doused with liquid nitrogen again.

The national working group for consumer protection (LAV) dealt with the new food trend and discussed possible health risks during the 37th meeting of its working group on “Food, consumer goods, wine and cosmetics” (ALB). A representative of the “Working Group of Food Chemistry Experts of the Federal States and the Federal Office of Consumer Protection and Food Safety” (ALS) was also present, who pointed out, among other things, that consumers are generally not used to handling foods prepared in this way. Regardless of whether a warning is present, damage to health cannot be ruled out.

The BfR considers the assessments of the ALB and ALS with regard to possible health risks from the use of liquid nitrogen with the food described therein to be comprehensible and plausible. The BfR currently has no further information on the cases described by the ALB. In the scientific literature, however, there are some case reports of damage to health after contact with liquid nitrogen, some of which occurred after brief contact with just a few splashes of liquid nitrogen (Roblin et al. 1997; Koplewitz et al. 2000; Mückley et al. 2007; Berrizbeitia et al. 2010; Walsh et al. 2010; Pollard et al. 2013; Divya & Saravanakarthykeyan 2018; Kim 2018; Zheng et al. 2018).

Further information on food safety is available from the BfR website

https://www.bfr.bund.de/en/food_safety-737.html



BfR “Opinions app”

References

- Berrizbeitia L. D., Calello D. P., Dhir N., O'Reilly C., Marcus S. (2010). Liquid nitrogen ingestion followed by gastric perforation. *Pediatric emergency care* **26**: 48-50.
- Divya V. C. and Saravanakarhikeyan B. (2018). Intraoral frostbite and Leidenfrost effect. *Australian dental journal* **63**: 382-384.
- Kim D.-W. (2018). Stomach Perforation Caused by Ingesting Liquid Nitrogen: A Case Report on the Effect of a Dangerous Snack. *Clinical endoscopy* **51**: 381.
- Koplewitz B. Z., Daneman A., Ein S. H., McGuigan M. A., Mian M. (2000). Gastric perforation attributable to liquid nitrogen ingestion. *Pediatrics* **105**: 121-123.
- Mückley T., Hofmann G. O., Pallua N. (2007). Severe liquid nitrogen freeze injury: a case report. *Journal of Trauma and Acute Care Surgery* **62**: E7-E10.
- Pollard J. S., Simpson J. E., Bukhari M. I. (2013). A lethal cocktail: gastric perforation following liquid nitrogen ingestion. *Case Reports* **2013**: bcr2012007769.
- Roblin P., Richards A., Cole R. (1997). Liquid nitrogen injury: a case report. *Burns* **23**: 638-640.
- Walsh M. J., Tharratt S. R., Offerman S. R. (2010). Liquid nitrogen ingestion leading to massive pneumoperitoneum without identifiable gastrointestinal perforation. *The Journal of emergency medicine* **38**: 607-609.
- Zheng Y., Yang X., Ni X. (2018). Barotrauma after liquid nitrogen ingestion: a case report and literature review. *Postgraduate medicine* **130**: 511-514.

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. It advises the German federal government and German federal states ("Laender") on questions of food, chemical and product safety. The BfR conducts its own research on topics that are closely linked to its assessment tasks.