

13 February 2023

## **Information from Food Standards Scotland (FSS) associated with glycerol levels in slush ice drinks that pose potential concern for young children when not consumed in moderation, (07 February 2023):**

FSS report that two cases, (one confirmed, and one possible) involving toddlers that **became unwell as a result of consuming slush ice drinks. Both children required hospitalisation and were presented with symptoms consistent with glycerol intoxication.**

FSS report two cases, (one confirmed, and one possible), involving young children who became seriously unwell with symptoms consistent with glycerol intoxication after consuming slush ice drinks, one of the cases consumed large amounts of slush in a short time period. NHS clinical opinion is that glycerol intoxication produced the observed symptoms.

Glycerol (E422) is a key ingredient used in the production of slush ice drinks, having the function of maintaining the slush properties, to prevent the liquid freezing solid. It is authorised as a food additive in accordance with Annex II and Annex III of Regulation (EC) No 1333/2008 on food additives. There is no numerical limit of glycerol (E422) as a food additive, it is a 'quantum satis' legal limit 'i.e., manufacturers can add as much glycerol as needed to achieve the desired technological function under good manufacturing process, but not more.

Slush ice drinks products contain glycerol to prevent the complete freezing of the drink. The level of glycerol varies dependent on the manufacturer and the product.

Although glycerol is generally of low toxicity, there are concerns about large quantities being consumed by young children in a short period of time. Side effects have been reported when glycerol is used to treat glaucoma these include nausea, headache and / or vomiting. The European Food Safety Authority, (EFSA) panel considered that a

conservative estimate of the lowest oral bolus dose<sup>1</sup> of glycerol associated with these effects was 125 mg/kg body weight (bw) per hour and further concluded that acute bolus exposure to glycerol (E 422) through its use as a food additive should stay below doses at which these side effects could occur. **The EFSA panel also noted that a young child<sup>2</sup> could exceed this by consuming only one drink containing glycerol.**

In order to remain at or below 125 mg/kg bw/hour, a toddler and an adult would only be able to consume 50 and 220 ml, respectively of a slushed ice drink containing 39,000 mg/L glycerol.

In summary, consumption of 1 x 350 ml slush ice drink by toddlers or young children in a short period of time could potentially lead to minor, self-limiting adverse effects such as headache or nausea and vomiting, particularly in sensitive individuals. Consumption of more than one drink in a short time period for this category of consumers could potentially lead to more significant adverse effects.

Unlimited refills are now a common business model at theme and activity parks. There are also a growing number of self-serve options at retail shops, convenience stores and newsagents amongst others.

FSS and FSA are working with industry trade associations to discuss concerns regarding exposure of glycerol by young children and in particular, the unlimited refill business models available at a variety of food business establishments that are often unmonitored. Consumption of more than one drink or large volumes being consumed in short time periods as a result, may potentially cause more significant adverse health effects in young children.

There is no legislation limiting the availability of self-service refills and no direct action is currently planned beyond making food businesses aware of the potential risks at this time whilst efforts continue to understand potential safety concerns.

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4 Oral bolus dose: A single dose of a drug or other substance given over a short period of time. It is usually given by infusion or injection into a blood vessel. It may also be given by mouth (NIH, 2023)

2 A young child is aged up to 36 months in this context, however children over 3 years of age may also exceed the dose EFSA identified as potentially resulting in adverse effects. Foods for infants and other groups | EFSA (europa.eu)