



Overview Regulation 1333/2008, choking and jelly confectionery



Agenda



- **Introduction to the issue (Michael Walker)**

- Brief history of fatalities caused by jelly mini-cups
- Regulatory response – food additives law

- **Choking safety (Ian Axford)**

- Parameters
- Anthropomorphic data

- **Break**

- **Split into groups for lab demonstrations**

Group 1 Laboratory demonstration of solubility tests (Michael Walker)

Group 2 Laboratory demonstration of compression and bite tests (Kirstin Gray)



Government Chemist acts:

As an independent referee analyst resolving disputes that occur in relation to certain legislation, and

As an advisor to the public sector and the wider analytical community, where there are measurement science implications of existing and proposed legislation and regulation.



Sample taken

Analysis (Public Analyst)

Grounds for dispute

Refer to Government Chemist

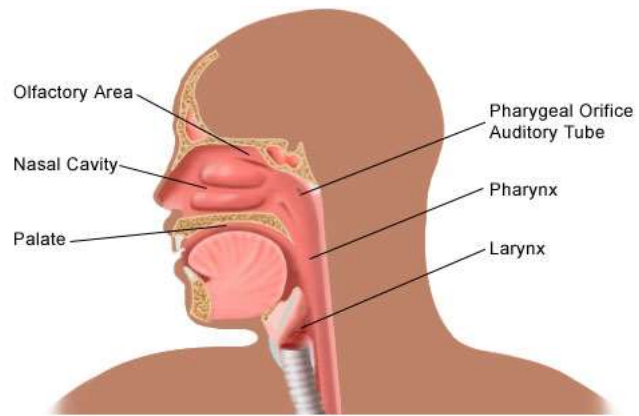
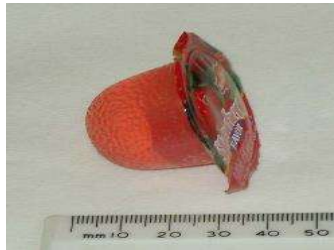
The Courts ...



Introduction (Michael Walker)



Jelly confectionery



<http://www.stanfordchildrens.org/content-public/topic/images/17/125817.gif>



Food additives law



L 354/16

EN

Official Journal of the European Union

31.12.2008

REGULATION (EC) No 1333/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 16 December 2008
on food additives
(Text with EEA relevance)

Latest consolidated version – 29th October 2018

Safety of all food additives that are currently authorised has been assessed by the Scientific Committee on Food (SCF) and/or EFSA. Only additives for which the proposed uses are considered safe are on the EU list.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1551876882404&uri=CELEX:02008R1333-20181029>



Definition of a jelly mini-cup



Part E of Annex II of Regulation 1333/2008

“The substances listed under numbers E 400, E 401, E 402, E 403, E 404, E 406, E 407, 407a, E 410, E 412, E 413, E 414, E 415, E 417, E 418, E 425 and E 440 may not be used in jelly mini-cups, defined, for the purpose of this Regulation, as **jelly confectionery of a firm consistence, contained in semi rigid mini-cups or mini-capsules, intended to be ingested in a single bite by exerting pressure on the mini-cups or mini-capsule to project the confectionery into the mouth**; E 410, E 412, E 415 E 417 may not be used to produce dehydrated foods intended to rehydrate on ingestion. E425 may not be used in jelly confectionery.”



The tests



Published information



Food Anal. Methods (2012) 5:54–61
DOI 10.1007/s12161-011-9223-3

Analytical Strategy for the Evaluation of a Specific Food Choking Risk, a Case Study on Jelly Mini-Cups

Michael J. Walker · Peter Colwell · Derek Craston ·
Ian P. Axford · Jack Crane



Safer sweets

Thu, 31/08/2017 - 15:10 | trabelanair



Michael Walker and Kirstin Gray of LGC discuss choking risks from jelly confectionery and technical appeals to the Government Chemist in this area.

Introduction



Choking hazards and anthropomorphic data (Ian Axford)



Parameters



- The paper 'Analytical Strategy for the Evaluation of a Specific Food Choking Risk, a Case Study on Jelly Mini-Cups'* identified five parameters in contributing to the risk of choking presented by a jelly mini-cup namely:

1. **Size**
2. Solubility
3. **Compression**
4. Accessibility
5. **Penetration**

❖ Walker, Michael & Colwell, Peter & Craston, Derek & Axford, Ian & Crane, Jack. (2012). Analytical Strategy for the Evaluation of a Specific Food Choking Risk, a Case Study on Jelly Mini-Cups. Food Analytical Methods - FOOD ANAL METH. 5. 10.1007/s12161-011-9223-3.



Parameters



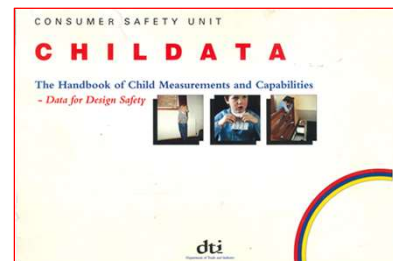
- The parameters of size, solubility, compression, accessibility and penetration of the jelly mini-cup are dependent on anthropometry (measurements and proportions of the human body) where young children are considered most at risk.
- It is recognised many objects both natural and manufactured that can present choking risks
- Standard makers are focusing on the dimensions and forces that could contribute to the risk of choking using anthropometric data particularly in developing risk based tests for childcare products.



Anthropometric data



- The most comprehensive collection of data at this time was the DTI's 'Consumer Safety Unit - CHILDATA - The Handbook of Child Measurements and Capabilities - Data for Design Safety' (June 1995 URN 95/681)
- Another DTI publication around this time was 'Choking risks to children under four from toys and other objects' (November 1999 URN/708)



Anthropometric data



Availability of correct anthropometric data is essential to define appropriate (safety) requirements in order to avoid/reduce entrapment, strangulation risks etc.

It is suspected that today's children are bigger than previously so new data is considered necessary and therefore the European standardisation body CEN have commissioned a task group CEN/TC 122/WG 1/TG 1 "Anthropometric data of children" to collect new information.



Parameters



- The parameters of size, solubility, compression, accessibility and penetration of the jelly mini-cup are dependent on anthropometry (measurements and proportions of the human body) where young children are considered most at risk.
- It is recognised many objects both natural and manufactured that can present choking risks over the years much of the work in setting requirements and test measurements usually in standards has been in relation to toy and childcare products where fatal accidents has inevitably led to legislation to ensure unsafe products are not placed on the market.
- Standard makers are focusing on the dimensions and forces that could contribute to the risk of choking using anthropometric data particularly in developing risk based tests.



1. Size



'Choking is defined as a blockage of the airways by a foreign body preventing passage of air to the lungs. The blockage can occur in the back of the throat (pharynx) or further down the trachea or bronchi. If the blockage completely prevents the flow of air, anoxia can result and this leads to permanent brain damage in about two minutes and death in about three minutes'

The size and shape of an object in relation to the dimensions of a child's throat is fundamental in determining whether the airways can potentially be blocked.

For toys and childcare articles the use of the small parts cylinder (SPC) is used to determine whether the product or component of the toy presents a potential choking hazard.



Small Parts Cylinder (SPC)



- The SPC can be found in the European safety standard for toys EN 71-1 'Physical and mechanical properties' and referenced by childcare standards EN 1400 'Soothers for babies and young children – Safety requirements and test methods', EN 14350 part 1 'Drinking equipment. General and mechanical requirements and tests'.
- The small parts cylinder described in EN 71-1 was adopted from the American Code of Federal Regulations, CFR Title 16, Part 1000 to end, §1501 based on a limited US clinical study.
- The small parts cylinder is a truncated cylinder having a diameter 31.7 mm, a short length of 25.4 mm and long length of 51.7 mm where the component is required to fit wholly within the cylinder without compression and not protruding.



3. Compression



The ability of the products to withstand compression with rupture contributes to the assessment of 'firmness' of the jelly.

The firmness is important in determining whether the jelly can break apart.

The strength of children's grip between thumb and finger or 'pinch' is given in the literature (Norris and Wilson 1995) are as follows:

- 13-42 N (M/F 5/17yrs) between tips of thumb and index finger
- 25-64 N (M/F 5/17yrs) between thumb and medial side of index finger



5. Penetration



The force a child can exert when biting can again help determine how easily the jelly can be broken up in the mouth or how easily the jelly can be ejected from the container by the child using its teeth.

Both EN 1400 'Soothers for babies and young children' and EN 14350 part 1 'Drinking equipment' describe puncture and bite tests to determine whether a teat can be bitten off and swallowed presenting a choking hazard.

The maximum mean vertical biting forces for children (Norris and Wilson 1995) are:

111 N (18 months)

222 N (36 months)

445 N (3-8 years)



Overview



An evidence based approach is important in ensuring that tests are representative of real life.

The ongoing process of collecting and reviewing anthropometric data is therefore essential in constructing tests.

However, the literature may not provide all the answers and confirmation is sometimes necessary and in this case a 5 year old boy helped provide confirmatory data



