

Rapid Procedure for the Testing of Nonnutritive Objects Found in Various Confectionary Products, Posing as a Possible Choking Hazard

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Abstract

Nonnutritive objects (toys) in confectionary food products can be a choking hazard for children under three years of age. A rapid method for the screening these types of toys is presented in this paper. It was found, that the use of a clear plastic cylinder is ideal for this rapid screening procedure of these products. By using this clear plastic cylinder, there was no need to measure each toy individually.

Keywords:

choking, chocolate, confectionary products, hazard, screening procedure

1. Introduction

The regulations in the Federal Food, Drug, and Cosmetic Act on the hazards of nonnutritive objects found in confectionary products have been in effect since 1938. Specifically, Section 342(d) (1) of the Act states, “If it is confectionery, and has partially or completely imbedded therein any nonnutritive object: *Provided*, That this clause shall not apply in the case of any nonnutritive object if, in the judgment of the Secretary as provided by regulations, such object is of practical functional value to the confectionery product and would not render the product injurious or hazardous to health.”[1]

All the way back to the original Federal Food and Drugs Act of 1906 there has been concerns about nonnutritive fillers in confectionary products [2]. Currently the FDA has some guidance on regulating the nonnutritive fillers with Compliance Policy Guide 515.100 “Confectionery-Use of Non-Nutritive Substances as Ingredients” [3] and Compliance Policy Guide 515.350, “Candy-Mixed with Trinkets and Sold in Vending Machines” [4]. Additional guidance comes from Import Alert 34-02 “Detection Without Physical Examination of Confectionery Products Containing Non-Nutritive Components”, which was revised in 3/5/2014 [5]. The Consumer Product Safety Commission (CPSC), U.S. Customs and Border Protection all have various regulations related to the nonnutritive objects found in confectionary products. Henceforth the nonnutritive objects will be

referred to as toys. Since many of the confectionary products examined and regulated by U.S. Food and Drug Administration contain toys, FDA has worked closely with the CPSC in developing consistent regulations. The unified goal of this process is to bring a higher level of awareness to the consumer, with regard to significantly reducing or eliminating the choking risk associated with the presentation of these toys embedded in a food product to children 3 years of age and younger.

Recently the Pacific Regional Lab Northwest received multiple confectionery products consisting of hollow chocolate eggs and hollow chocolate figurines. These products were wrapped in brightly covered foil and obviously directed toward an upcoming holiday celebration centered on children. Inside the chocolate eggs was a single plastic toy wrapped in cellophane (Figure 1), while the chocolate figurines contained small pictures attached to a thin magnet wrapped in cellophane (Figure 2).

We needed to examine each individual toy within the chocolate shell for the possibility of it being a choking hazard to children under 3 years of age. At the time of our analysis the only way we had to examine the toy or picture magnet was to use a ruler and physically measure each toy or magnet. This was a long, slow and tedious process. There was a need for a more rapid screening procedure with future samples. We found two viable options which could speed up the process, and accurately confirm if small toys in confectionary products did in fact pose a significant risk as a choking hazard for small children.

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Figure 1: Hollow chocolate egg containing small toy

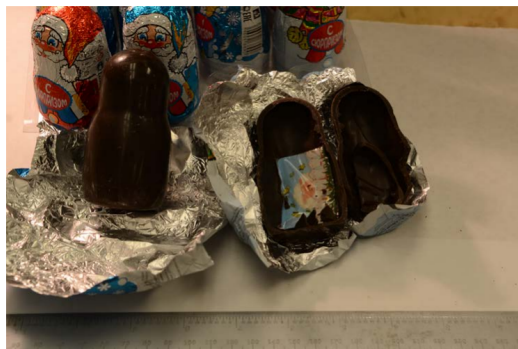


Figure 2: Hollow Chocolate figurine with small magnetic picture



Figure 3: Plastic cylinder suggested by the CPSC



Figure 4: Cardboard tube recommended by health departments



Figure 5: Reserved toys from the chocolate samples

2. Materials and Method

The CPSC regulations for assessing small toys that might pose as a possible choking hazard is listed under 16 Code Federal Regulations Part 1501, “Method for Identifying Toys and Other Articles Intended for Use by Children Under 3 Years of Age Which Present Choking, Aspiration, or Ingestion Hazards Because of Small Parts” [6]. The requirements and testing procedure for the toy or article falls under Part 1501.4. This section describes a plastic cylinder with specific dimension (Figure 3). If a toy or other object fits into the cylinder without compressing, it is considered a fail and item in question could pose as a choking hazard to children 3 years of age and younger.

The alternative to the plastic cylinder, often recommended by health departments, local authorities and consumer groups, is to use the cardboard tube found in the center of a roll of toilet paper (Figure 4) [7]. It is a low cost solution and is readily available to the average consumer, should they need to check the size of a toy and whether or not it poses a choking risk for

their child.

Using the reserved toys found in our chocolate egg sample (Figure 5), we tested both tubes to assess their usability to rapidly screen toys based on physical size to determine if they posed a possible choking hazard. Unfortunately, there were no reserved magnetic pictures to test, so the findings presented here are limited to the testing performed on the toys.

3. Results and discussion

All the toys in (Figure 5) easily fit into either tube. All the toys pictured were in violation of CPSC’s Part 1501 of the CFR [5], and agrees with the earlier conclusions based on the physically measured size of the toys. Both tubes provided very rapid screening of the toys as possible choking hazards. In a direct comparison of the tube screening method to that of manually measuring each of the individual toys with a ruler, the tube method conclusively proved to be an accurate and efficient means for rapid screening of these toys. Although, each type



Figure 6: A small plastic top



Figure 7: A small plastic spider

of tube had its own advantages and disadvantages: The clear plastic tube had two big advantages over the cardboard tube: (1) since it was formed from ridged plastic, it retained its shape over time; (2) The clear plastic tube allowed for photo documentation of the toy within the tube (Figures 6, 7, & 8), whereas a toy within the cardboard tube could not be seen by the analyst (Figure 4). The cardboard tube had one advantage over the clear plastic tube, and that is the speed of analysis. Since the cardboard tube was open-ended, the toys could be dropped through it, almost like steady stream. For the clear plastic tube with one sealed end, the toys had to be removed each time before the next toy could be tested. The cardboard tube had two disadvantages: (1) since the cardboard tube is constructed of thin cardboard, and it was easily deformed and damaged over time. As demonstrated (Figure 9) the cardboard tube easily lost

its round shape, which could cause the analyst to incorrectly evaluate the toy size. (2) Photo documentation of a toy within the cardboard tube would be impossible, unless taking a picture from above.

Based on our findings, the plastic tube presents the best method for rapid examination of toys (nonnutritive objects) placed inside food confections.

4. Declaration of Conflicting Interest

The author declares that there is no conflict of interest. Research was funded by U. S. Food and Drug Administration.



Figure 8: A plastic figurine of a basketball player

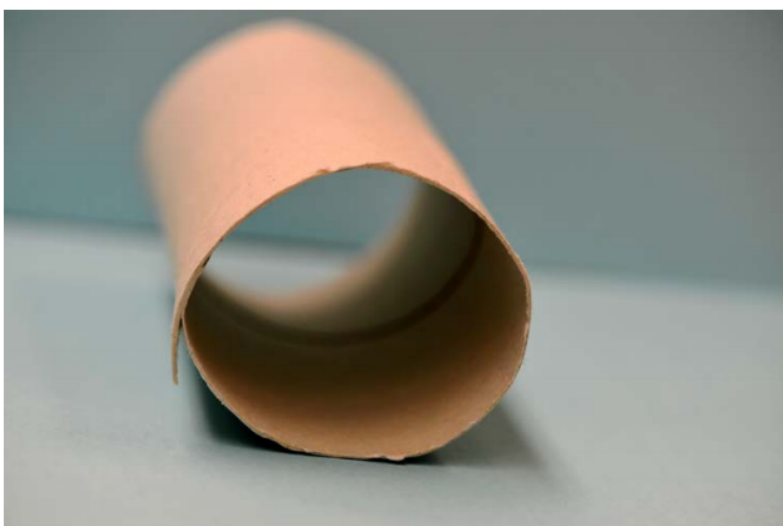


Figure 9: Cardboard tube showing wear and tear from use

5. Disclaimer

The views expressed are those of the author and should not be construed to represent the views and policies of the U. S. Food and Drug Administration. Any reference to a specific commercial product, manufacturer, or otherwise, is for the information and convenience of the public and does not constitute an endorsement, recommendation or favoring by the U. S. Food and Drug Administration.

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7. Article Information

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