

Children oral exposure to small parts from use of magnetic play set


Source document:
Rapid Alert System for Non-Food Products (RAPEX)
Notification number 0770/06 according to Article 12 of GPSD: magnetic play set
2006 – Week 46

SCENARIO SETTING

PRODUCT / SOURCE
Product as named in the source document:
Magnetic play set

Product Specifications:

- General Description: The play set is packaged in a cardboard box. It contains plastic dolls and accessories that have small magnets to keep parts together. The magnets measure 3 mm. in diameter and are embedded in different parts of the play set.
- Proof of conformity: CE marked.
- Manufacturer: To be completed.
- Distributor: To be completed.
- Country of origin: China.



HAZARD (see Hazards, typical injury scenario and typical injury Table) / AGENT
Small parts (magnets)

CONSUMER(s) (see Vulnerable consumers Table) / TARGET(s)
 > Children
 > Young children
 > Very young children

EXPOSURE EVENT(s): Task(s)/Activity(ies)
Product usage: normal use of magnetic play set

PATHWAY TO INJURY / EXPOSURE PATHWAY
 STEP 1: Small parts (i.e., magnets) are falling out from the play set
 STEP 2: Children are swallowing more than one magnet
 STEP 3: Magnets can attract each other
 STEP 4: Magnets attraction cause intestinal perforation, infection or blockage, which can be fatal.

EXPOSURE MODEL

Exposure Assessment Concept
The probability of children exposure to small parts (i.e., magnets) swallowed consists of multiplying the conditional probabilities of the combined events. The EMARS WP4 team made the assumption that "Internal organ injury" (see Severity of injury Table) may result if more than one magnet is swallowed. However, no quantitative data is yet available on the separate steps of this pathway but there is estimation on the combined probability of steps 2, 3 and 4.

Mathematical Expression/Algorithm(s)
Calculation of children oral exposure to (i.e., probability of injury caused by) small parts (i.e., magnets) from use of the play set

$$P = F \times S_i$$

Parameters:

Symbol	Name	Data type
F	Probability of the magnet falling out	Probability
S _i	Probability of the magnet being swallowed and causing internal injury	Probability
P	Probability of injury caused by small parts from the magnetic play set	Probability

Routes(s): Oral exposure

EXPOSURE PARAMETER(S)

Probability of the magnet falling out of the play set (F)	7/10 [probability]	Note: The EMARS WP4 team estimated this data, during 11 June 2007 meeting, as a study case for the "RAPEX Risk Assessment Guidelines".
Probability of the magnet being swallowed and causing internal injury (S _i)	3/170 [probability]	Note: This probability is based on available data, as of 11 June 2007, from complaints.

RISK ASSESSMENT RESULTS

Hazard Assessment Results (see Severity of injury Table)

Type of injury(ies) caused by small parts from use of the magnetic play set	Internal organ injury	Note: This type of injury is using the taxonomy of the "Severity of injury Table" under the "Ingestion" type of injury.
Severity of children oral exposure/injury caused by small parts from use of the magnetic play set	Serious	Note: According to the "Severity of injury Table", the severity of injury is defined as "Serious".

Exposure Assessment Results (see Probability of injury Table)

Children oral exposure to (i.e., probability of injury caused by) small parts from use of the magnetic play set (P)	12/1000 [probability]	Note: This exposure value (i.e., probability of injury) falls within the level of ">1/100" named as "Unusual but possible" according to the "Probability of injury Table".
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Risk Characterisation (see Risk level Table)

Risk level of children oral exposure/injury caused by small parts from use of the magnetic play set	Serious Risk	Note: According to the "Risk level Table", the combination of severity (i.e., "Serious") and probability (i.e., "Unusual but possible") leads to "Serious Risk" level.
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