

# American Academy of Pediatrics



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On behalf of the  
**American Academy of Pediatrics**

**Consumer Product Safety Commission:**

“Magnet Sets NPR; Oral Comments”

Good morning. I appreciate this opportunity to offer comments today before the Consumer Product Safety Commission about the serious child health hazard posed by high-powered magnets. My name is Mark A. Gilger, MD, FAAP, and I am proud to represent the American Academy of Pediatrics (AAP), a non-profit professional organization of more than 60,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. I am Pediatrician in Chief at Children’s Hospital of San Antonio and Professor and Vice Chair at the Baylor College of Medicine.

### **Child Health Risks Posed by High-Powered Magnets**

The AAP commends CPSC for taking action to protect children from the serious and growing hazard of neodymium or rare earth magnet ingestion. The Academy supports the Commission’s proposed rule for magnet sets and applauds this effort as a significant step toward reducing the incidence of child morbidities and mortalities caused by ingestion of neodymium magnets. These magnets’ unique properties cause serious, life-threatening injuries when a child ingests two or more magnets. Pediatricians have been aware of the rising dangers associated with magnet ingestion for many years, and we have seen firsthand the significant and lifelong health impact this can have.

Children are at risk for ingesting these products for several reasons. Mouthing and sucking activity among infants and very young children is a very common and necessary part of early childhood behavior that satisfies both nutritive (e.g. breast or bottle feeding) and non-nutritive (e.g. pacifier, toy, blanket) needs. Research indicates that from two months of age to 36 months, children engage in mouthing behavior between 20 minutes to 2.5 hours per day, with a decline as children increase in age. Given this developmentally appropriate behavior, it is understandable why very young children would readily put these magnets in their mouths. Additionally, toddlers can swallow neodymium magnets because of their small, shiny, and bright appearance. Older children end up accidentally ingesting them while using these products to mimic piercings in their mouth, unaware of the ingestion risk.

Magnet ingestion has grown as a child health issue since the mid-2000s, when manufacturers introduced into the marketplace children’s toys containing small, powerful magnets. Incidents of children requiring medical care as a result of ingesting these magnets began occurring at this time, and the issue then rose from the attention of the pediatric medical community to CPSC. These injuries are vastly different from and more serious than those caused by ingestion of other small parts. An average of 100,000 foreign body ingestions occur annually in the U.S., with 80 percent of incidents occurring in children. Most pass without symptoms and do not require surgical interventions. However, high-powered magnets are an entirely different type of hazard.

### **Health Effects of High-Powered Magnet Ingestion**

Neodymium magnets are the strongest type of permanent magnet manufactured. When a child ingests multiple magnets or a magnet along with another ferromagnetic object, they are capable of attracting across tissue within the stomach and bowel. This attraction pinches tissue together, and can cause inflammation, blockages, and eventually tissue death, known as necrosis. This can further lead to perforation and ulceration, and can ultimately result in sepsis, a life-threatening infection.

Initial symptoms of high-powered magnet ingestion are nonspecific, and include fever, nausea, vomiting, and pain. Proper diagnosis and treatment can be delayed due to the lack of specificity of symptoms. This is particularly the case in instances where very young children are unable to verbalize that they have ingested a magnet, and when older children are embarrassed to say what happened or do not immediately realize the connection between their symptoms and the ingestion. Delayed diagnosis and treatment can result in additional and potentially irreparable or life threatening tissue damage.

Roughly 10 percent of affected patients will require long-term care or repeated interventions. The most common intervention for high-powered magnet ingestion is surgical repair of a perforation or fistula. In cases requiring bowel resection, the health implications are long-term and serious. A 2012 survey of pediatric gastroenterologists by the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) found that children 6 and under represented 51 percent of all magnet

ingestion cases, and that 80 percent of reported cases required endoscopic or surgical intervention. These are serious morbidities and significant health interventions that have lifelong effects on children.

### **Current and Proposed Federal Regulatory Action**

CPSC took action to address this hazard in toys by implementing a mandatory standard that defines a “hazardous magnet” and a “hazardous magnetic component” in a toy as one that is a small object with a flux index greater than 50. Implementation of this standard was then associated with a decline in high-powered magnet ingestion incidents. However, in 2008 manufacturers introduced a new product; large sets of neodymium magnets marketed as adult desk toys. Initially marketed to individuals 13 and older, manufacturers transitioned to marketing them as for ages 14 and older to avoid the purview of the toy standard. Introduction of these products led to a rising incidence of child magnet ingestion, causing numerous serious injuries, many of which required surgical intervention.

CPSC’s review of National Electronic Injury Surveillance System (NEISS) data estimated that U.S. emergency departments treated 1,700 magnet ingestions for high-powered magnets from magnet sets between January 1, 2009 and December 31, 2011. These incidents continued at an increasing rate despite CPSC’s efforts to encourage changes in marketing and use of warning labeling. In 2012, CPSC ultimately proposed a new rule for magnet sets that would apply the same standard that is currently applied to toys to all

high-powered magnet sets. This standard would prohibit magnet sets containing magnets that both meet the small part size and have a flux index greater than 50.

The AAP fully supports this proposed rule because it will address a well-documented threat to child health. The AAP agrees with CPSC's preliminary determination in its 2012 Notice of Proposed Rulemaking (16 CFR Part 1240, Docket # CPSC-2012-0050) that there is an unreasonable risk of injury associated with children ingesting neodymium magnets that are part of magnet sets. The AAP also fully agrees with CPSC's finding that alternative regulatory action would not adequately address that risk. Warning labels are a less effective injury prevention method than changing a product to reduce the hazard, and would be particularly ineffective in this instance because children six and younger represent the bulk of incidents associated with this product. Changes to the products' containers would also not be an effective solution, because the nature of these magnet sets is such that it is unlikely consumers would keep them in their containers.

The safest and most effective regulatory action that CPSC could take to eliminate or reduce the ingestion hazard is to prevent exposure to this foreseeably hazardous product. Limiting magnet strength for products meeting the small part size definition to address the issue of attraction after ingestion is a common-sense solution to reduce the occurrence of these tragic and preventable outcomes that I have described. For these reasons, the AAP applauds CPSC for the Notice of Proposed Rulemaking, and I urge the commissioners to move this rule forward into implementation.

## **Recommendations**

As I conclude, I would like to share the following recommendations for the CPSC:

**Public Education.** Although high powered magnets have been taken off the market, we should remain vigilant about the ongoing risk for injuries. Educating the public is one important way that parents and caregivers can prevent injuries if they bought these products in the past or come in contact with the products. CPSC should continue efforts to highlight the dangers of these products with parents and caregivers.

**Physician Awareness.** Children swallow a variety of different objects. This phenomena is not new to emergency room physicians or surgeons. NASPGHAN’s and AAP’s educational resources continue to be important to prevent magnet ingestions and to ensure timely interventions when ingestions or injuries are identified. Partnering with these organizations, along with others engaged in physician education would be an important activity.

**Federal Rule.** As I mentioned earlier, young children are the most at-risk for swallowing these high-powered magnets – and by no fault of their own. They do not possess the cognitive ability to judge a magnet from candy. In addition, toddlers are at an age where are developmentally inclined to put things into their mouths. Given the risks of injuries, disabilities and death, the best course of action is the pursuit of clear, decisive action to keep high-powered magnet products off the market and to limit magnet strength for future

products meeting the small parts test. Furthermore, applying the standard to magnets sold individually would protect children from this health risk by ensuring that it is not possible to circumvent the spirit of the rule by transitioning to sale of these products individually.

Thank you for the opportunity to provide input to the CPSC on this critical child health issue. I am happy to answer any questions that the commission may have