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## MEETING LOG

**SUBJECT: ASTM F15.22/F15.77 Subcommittee's Toys/Magnets Meeting Log**

**OP PLAN ENTRY: Toys /Magnet Sets**

**DATE OF MEETING: 11/15/2024**

**LOCATION OF MEETING: Virtual**

**CPSC STAFF FILING MEETING LOG: Benjamin Mordecai (LSM)**

**FILING DATE: 11/22/2024**

**CPSC ATTENDEE(S):** Benjamin Mordecai (LSM), Ashley Johnson (HSPP), Jacqueline Campbell (EXRR), Matt Kresse (LSM), Stephen Harsanyi (ESHF), Suad Wanna-Nakamura (HSPP), Jill Hurley (ESHF)

**NON-CPSC ATTENDEE(S):** Contact SDO for the full attendee list.

### Summary of Meeting:

The two subcommittees met to jointly discuss two CPSC staff letters describing an injury incident involving a child swallowing 17, 2.5 mm magnets, where medical intervention was required to remove the magnets that did not naturally pass. In the meeting, CPSC staff explained that the magnets did not internally interact across the intestinal lining, but did internally interact across a projection in the large intestines. Additionally, staff characterized the magnets as forming a ring on the projection. Several participants discussed potential ways that the ring could have been interacting with the intestinal protrusion, such as being physically looped or stuck around the projection, and that magnet interaction may not be the cause for the retained magnets. Staff reiterated, based on medical imaging and medical records associated with the incident, that this is an example of a magnet internal interaction, even though it was an interaction across a projection of intestine as compared to across an intestinal wall. Subcommittee members asked staff to make the images available to the subcommittee and staff said they would look into it.

CPSC staff stated that they tested the magnets removed from the child, and the magnets measured under 50  $\text{kg}^2\text{mm}^2$ , which calls into question whether the flux limit of "less than 50  $\text{kg}^2\text{mm}^2$ " is adequate to prevent magnet injuries associated with these products. CPSC staff reminded the subcommittee participants that no study was performed to determine the flux limit and that the values were chosen based on incidents not observed below 70  $\text{kg}^2\text{mm}^2$ , with a factor of safety lowered to 50  $\text{kg}^2\text{mm}^2$ . CPSC staff also explained that, as discussed in the briefing packages supporting the Safety Standard for Magnets (87 FR 57756), staff has had growing concern about smaller diameter magnets from magnet sets, particularly those around 2.5 mm in diameter. CPSC staff stated that there have been numerous internal interaction incidents involving magnets of this size, and that magnets of this size often measure less than 50  $\text{kg}^2\text{mm}^2$ . Subcommittee members requested CPSC staff's test data on 2.5 mm and 3 mm diameter magnets.

The chair next discussed the test methodology and asked how CPSC staff could be certain their values were accurate, citing the ISO TC 181 WG1 round robin testing where many third-party labs participated in



calculating the flux index and the values were not consistent, but were unsure if it was due to magnet manufacturing tolerances or measurement technique. CPSC staff responded by stating that they conducted their own study using identical magnets sent out to multiple labs (*i.e.*, each lab tested the same set of magnets). The labs found varying results, eliminating the possibility of manufacturing variability and suggesting the differences are operator or test application variabilities. CPSC staff stated that one lab obtained the same values as staff. These values were also the highest in the study, indicating that the measures were more accurate because the higher the values, the closer the readings are to the magnet pole. CPSC staff believes that the reason varying results exist between the labs is due to measurement distance from the poles. Subcommittee members requested the raw data from the round robin testing.

Staff then discussed their measurement technique and guidance document. Staff described a methodology using an XY table, securing the magnet, and mounting the probe for a more systematic and repeatable process.

The subcommittee then discussed forming a joint working group between the two subcommittees to address this issue.

**Next Steps:**

CPSC staff will inquire about sharing the medical images from the incident, the raw data from the round robin testing, and staff's test data on the 2.5 mm and 3 mm magnets. The joint working group will begin their efforts in the near future, though the next meeting has yet to be scheduled.