

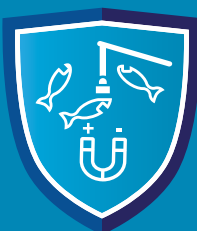


CASP2022

Coordinated Activities
on the Safety of Products



Toys
with
magnets



Final
Report

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List of abbreviations

ABBREVIATION	DESCRIPTION
AdCo	Administrative Cooperation Group
CASP	Coordinated Activities on the Safety of Products
DG JUST	Directorate-General for Justice and Consumers of the European Commission
EC	European Commission
EEA	European Economic Area
EU	European Union
MSA	Market surveillance authority
PSA	Product-specific activity
RAG tool	Risk Assessment Guidelines (RAG) tool
RAPEX Guidelines	Decision (EU) 2019/417
TSD	Toy Safety Directive (2009/48/EC)

Executive summary

Objectives of the activity

The Coordinated Activities on the Safety of Products (CASP) projects enable all market surveillance authorities (MSAs) from European Union (EU) and European Economic Area (EEA) countries to cooperate in reinforcing the safety of products placed on the European Single Market. This activity focused on toys with magnets, which were identified by the MSAs as a priority for a targeted safety investigation. The products were sampled and tested following commonly agreed criteria in a single European laboratory selected by the participating MSAs.

Product scope

The products in scope were toys with magnets intended for children above and below 36 months of age.

Main testing criteria

The sampled products were tested according to the harmonised standard EN 71-1:2014+A1:2018 Safety of toys – Part 1: Mechanical and physical properties. Clause 4.23 of the standard stipulates the requirements for toys that include magnets and magnetic components.

Results

- Out of 145 toys tested, 20 did not meet at least one of the technical requirements of the testing plan.
- In total, 14 toys did not meet the requirements of Clause 4.23 on magnets.
- Checks on warnings, marking and instructions performed by MSAs showed that 77 of the samples did not meet the requirements.

Conclusions

The testing results showed that 14% of the samples did not meet at least one of the requirements outlined in the testing plan.

The main reasons for non-compliance issues were found in Clause 4.22 Small balls and Clause 4.23 Magnets. Small magnets that significantly exceeded the limit allowed for the magnetic flux index cause particular concern because, if more than one magnet is swallowed (or if one magnet and a metal ferromagnetic object are swallowed), the two parts can attract each other causing a blockage or perforation of the intestine and/or cutting the blood supply to parts of the intestine. Children of all ages are at risk when it comes to swallowing more than one magnet.

Together with ingestion, another foreseeable misuse of such small magnetic balls is their use as fake piercings by older children, as promoted by social media trends.

Other hazards revealed include the exposure of young children to small parts resulting in the risk of choking and exposure to plastic packaging (Clause 6 on packaging) that is too thin (leading to suffocation risks).

Risk assessments performed by the MSAs showed that 12 samples presented a serious risk, 2 a high risk and 3 a medium risk. Among the main measures taken in relation to the products that did not meet the requirements, 5 products were recalled from the end user, 6 were withdrawn from the market, a ban was imposed on 3 products and a stop of sales on other 3 products.

Key recommendations

For consumers

- Be aware of the **risks posed by strong magnets** and communicate them to children of all ages. Play should be supervised to ensure safety.
- **When more than one magnet is swallowed**, they can cause a **blockage in the intestine**, perforate or damage the intestine and/or cut the blood supply to parts of the intestine. Seek immediate medical treatment if you believe that a magnet has been swallowed, particularly if a child is exhibiting flu-like symptoms, vomiting or is suffering from stomach pain.
- **Regularly inspect toys with magnets during their lifetime.**

For economic operators

- **Be aware of your obligations** under the applicable legislation and take all necessary precautions to ensure that the products fully comply with the Toy Safety Directive (2009/48/EC).
- **Preferably use a magnet less than 50 kG²mm²**. If using magnets **above 50 kG²mm²**, make sure that the magnet is big enough or add a part made of plastic / wood / another material around it which passes the torque/tension/drop/ impact tests in order to have a bigger magnet that can't fit in the small parts cylinder.
- **Be aware that neocubes** have been defined as a toy and should therefore comply with the Toy Safety Directive.

For public authorities

- Communicate the **risks posed by magnetic toys** to consumers, including the symptoms produced if magnets have been swallowed.
- Toys including small magnets with a high magnetic flux can be found on **street markets** and **online marketplaces**. Pay attention to these sampling channels and include them in your market surveillance activities.

For standardisation organisations

- The **testing method for small magnetic balls**, particularly those found in neocubes, should be reviewed by CEN/TC 52 in order to account for the different magnetic flux indexes found in different balls of different colours from the same toy.
- The testing method should also account for the **total magnetic flux index** between several structures of the same toy formed by more than one small magnetic ball and another magnetic element that fit within the small parts cylinder.

1. Overview of the activity

1.1. Participating MSAs

In total, 13 MSAs from 12 EU Member States and EEA countries participated in the Toys with magnets product-specific activity (PSA).

Table 1 - List of participating MSAs

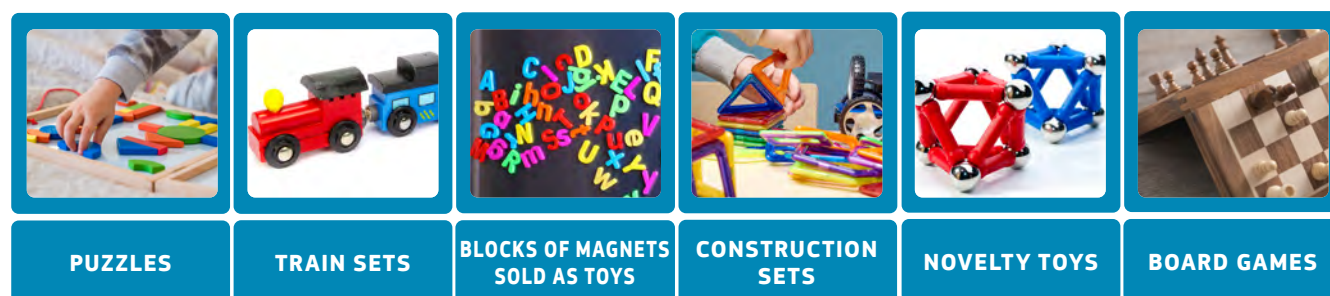
COUNTRY	MSA
Austria	Federal Ministry of Social Affairs, Health, Care and Consumer Protection
Belgium	Federal Public Service Economy - Directorate General for Quality and Safety
Croatia	State Inspectorate
Cyprus	Consumer Protection Service, Ministry of Energy Commerce and Industry
Czechia	Czech Trade Inspection Authority
Germany	District Government of Cologne Government of Upper Bavaria – Trade Inspectorate
Iceland	Housing and Construction Authority
Ireland	Competition and Consumer Protection Commission
Latvia	Consumer Rights Protection Centre
Luxembourg	Luxembourg Institute of Standardisation, Accreditation, Safety and Quality of Products and Services (ILNAS) – Market Surveillance Department
Malta	Malta Competition and Consumer Affairs Authority
Norway	The Norwegian Directorate for civil protection

1.2. Product scope and testing criteria

1.2.1. Product scope

The MSAs agreed to focus on toys with magnets intended for children above and below 36 months of age, including magnetic novelty toys (such as neocubes), which are not explicitly

marketed as toys but can be considered as such, because they have play value and it is foreseeable that children under 14 years will play with them¹.



1.2.2. Testing criteria

All sampled products were tested against EN 71-1:2014+A1:2018 Safety of toys – Part 1: Mechanical and physical properties.

Clause 4.23 of the standard stipulates the requirements for toys that include magnets and magnetic components. Based on this clause, any magnet or magnetic component that can detach from a toy shall either have a magnetic flux index less than

50 kG²mm² (0.5 T²mm²), or shall not fit entirely in the cylinder when tested in relation to the small parts cylinder.

In addition to the laboratory tests, the MSAs performed checks on warnings, markings and instructions in their national language(s). A checklist with the main requirements was prepared by the technical expert to provide additional guidance to the MSAs.

¹ Based on the decision taken at an Administrative Cooperation Group (AdCo) meeting (the Expert Group on Toy Safety): <https://ec.europa.eu/transparency/expert-groups-register/screen/meetings/consult?lang=en&meetingId=25995&fromExpertGroups=true>.

2. Sampling and testing

2.1. Sampling distribution and sampling channels

The sampling was carried out on the basis of a pre-selection by each of the MSAs, in line with the peculiarities of each market.

The participating MSAs collected 145 samples in total. Sampling was performed both online (34%) and from physical shops (66%).

Table 2 - Number of samples collected by participating MSAs

COUNTRY	MSA	ABOVE 36 MONTHS OF AGE	BELOW 36 MONTHS OF AGE
Austria	Federal Ministry of Social Affairs, Health, Care and Consumer Protection	7	3
Belgium	Federal Public Service Economy - Directorate General for Quality and Safety	13	5
Croatia	State Inspectorate	9	1
Cyprus	Consumer Protection Service, Ministry of Energy Commerce and Industry	9	1
Czech Republic	Czech Trade Inspection Authority	7	3
Germany	District Government of Cologne	10	0
	Government of Upper Bavaria – Trade Inspectorate	7	3
Iceland	Housing and Construction Authority	10	0
Ireland	Competition and Consumer Protection Commission	10	0
Latvia	Consumer Rights Protection Centre	9	0
Luxembourg	Luxembourg Institute of Standardisation, Accreditation, Safety and Quality of Products and Services (ILNAS) – Market Surveillance Department	8	2
Malta	Malta Competition and Consumer Affairs Authority	16	2
Norway	The Norwegian Directorate for civil protection	8	2
TOTAL		123	22

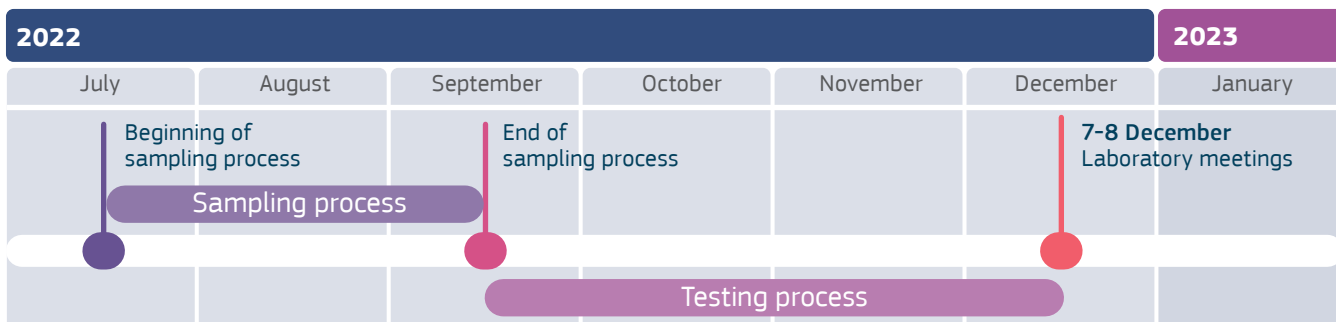
2.2. Testing process

The testing laboratory for this activity was selected through a tender procedure, launched in May 2022. The tender specifications were sent to 93 laboratories that had been identified as part of the project team’s laboratory engagement strategy. Each laboratory was asked to submit its offer by 30 May 2022. Ten laboratories submitted an offer within the given timeframe. Based on the completeness and competitiveness of the offer, six laboratories were pre-selected and invited to an interview to further discuss their offer. During the intermediate meeting the MSAs were presented with comparative analyses of

the technical quality and financial aspects of the offers received from the laboratories. The MSAs selected the laboratory that was awarded the highest number of final points based on the quality and financial competitiveness of their offer.

Following the selection of the laboratory, the MSAs were given 3 months to collect the samples and send them to the laboratory. The testing process was completed on 23 November 2022. The laboratory meeting took place on 7 and 8 December 2022.

Figure 1 - Timeline of the sampling and testing process



3. Test results

3.1. Overview of the test results and main findings

A total of 125 out of the 145 samples tested by the laboratory met all the technical requirements outlined in the final testing plan.

The majority of the samples (66%) were purchased in physical shops. The difference in the failure rate of toys from different sampling channels indicated that toys sampled online showed a significantly higher failure rate than those sampled from physical shops: 24% of toys collected online and 8% of those collected from physical shops did not meet the requirements of the testing plan.

The MSAs performed checks on warnings, marking and instructions in their national language(s). Out of 145 samples, 77 (53%) did not meet the requirements. The most common non-compliance issues were incorrect or missing (age) warnings and warnings that were not in the appropriate national language(s). However, 60 out of the 77 samples that did not meet the requirements of the checks performed by the MSAs on warnings, markings and instructions, passed the testing performed by the laboratory. On the other hand, there were four samples that met all the requirements of the MSAs' checks on warnings, markings and instructions, but did not pass at least one of the laboratory's tests.

If we consider both the tests performed by the laboratory and the warnings, markings and instruction checks performed by the MSAs, a total of 80 samples did not meet at least one of the requirements (Figure 3).

Figure 2 - Overall test results (excluding warnings, markings and instructions) (N=145)

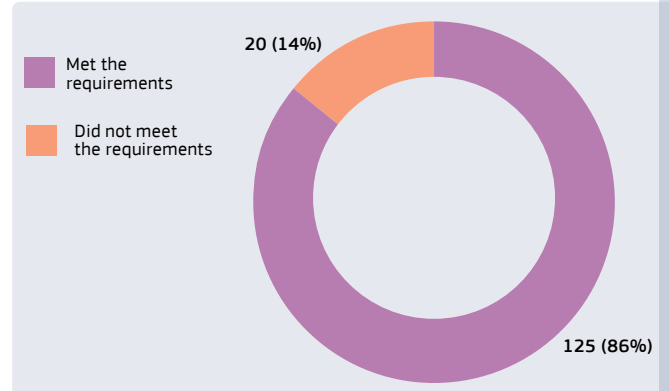
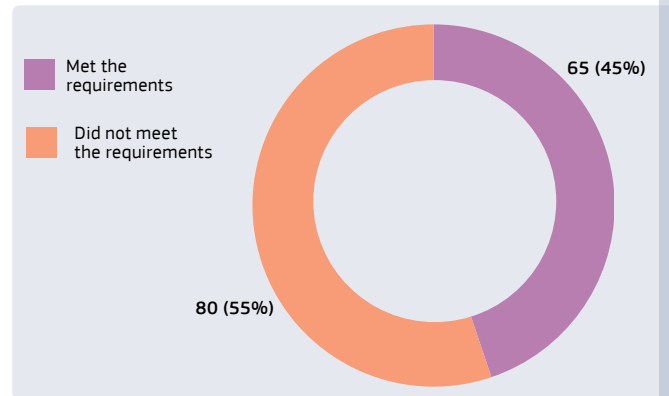


Figure 3 - Overall test results (including warnings, markings and instructions) (N=145)

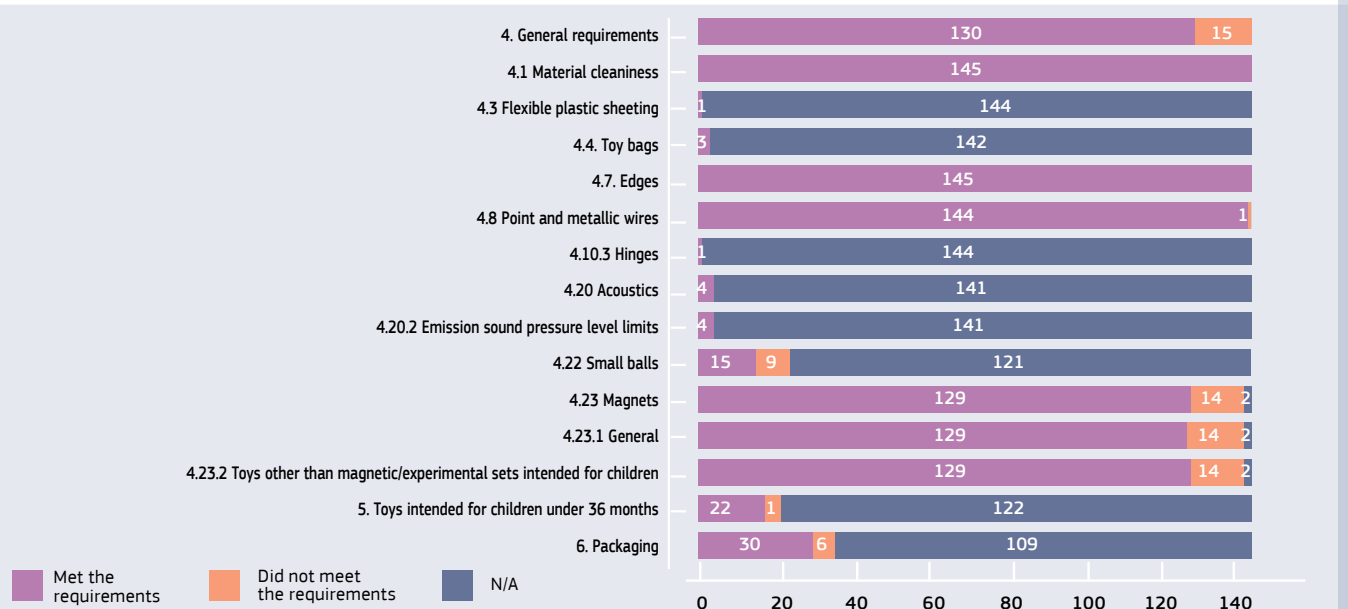


3.2. Results per clause

Looking at the results per clause of EN 71-1:2014+A1:2018 Safety of toys – Part 1: Mechanical and physical properties, clauses that produced a particularly large number of samples

that did not meet the requirements included, Clause 4.22 on small balls, Clause 4.23 on magnets and Clause 6 on packaging. Figure 4 provides an overview of the test results per clause.

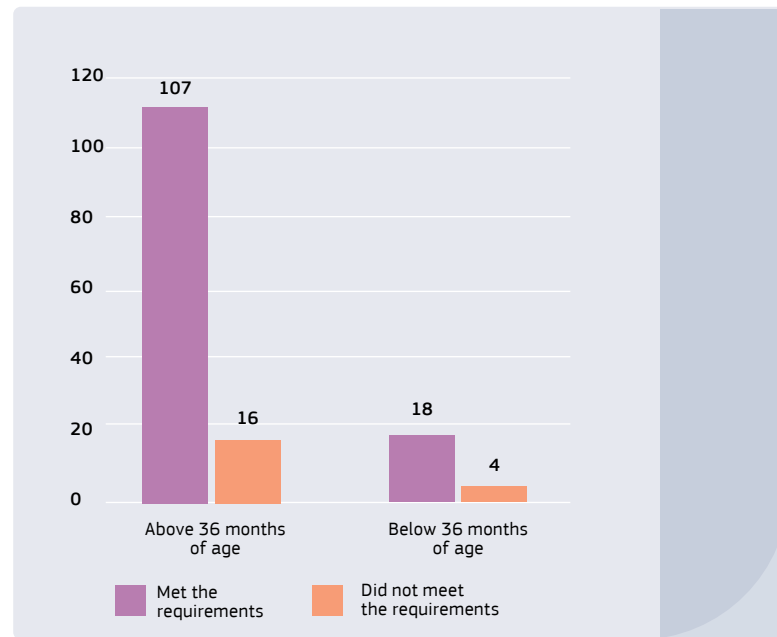
Figure 4 - Test results per clause (N=145)



3.3. Results per age category

Overall, 123 out of the 145 toys tested were intended for children above 36 months, and 22 were intended for children below 36 months. Toys for children below 36 months presented a higher failure rate (18%) than toys for children above 36 months (13%).

Figure 5 - Test results per age category (N=145)



3.4. Testing neocubes / novelty toys: outcomes and challenges

Toys with magnets also include magnetic novelty toys, such as neocubes, which have recently become particularly popular. They are often not explicitly marketed as toys and/or are labelled as being intended for children older than 14 years. However, the Expert Group on Toy Safety (AdCo) reached the conclusion that these products are to be considered as toys, because they have a play value and it is foreseeable that children under 14 years will play with them.

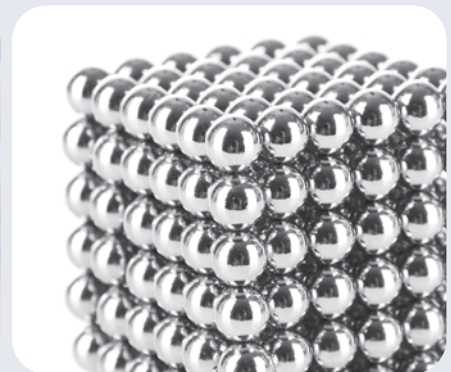
Novelty magnetic toys and neocubes were sampled in this activity and tested according to EN 71-1. The sampled toys have a play value even for younger children.

In terms of testing, these products presented a series of challenges. They are composed of a multitude of small magnetic balls of the same or different colours. However, the standard requires that only one ball is tested (instead of a range of balls to check whether any difference in the magnetic flux

is detected). Testing showed a considerable difference between the magnetic flux index measured in different balls of the same sample. Furthermore, the testing showed that in some cases magnetic coatings were used (instead of magnetic balls) and the magnetic flux index of the balls was determined by both the colour and thickness of the paint at the point of measurement. This aspect is not properly covered by the standard.

In total, 12 out of 15 novelty toys tested in this activity did not meet the requirements of the testing plan in relation to small balls Clause 4.22 (9 samples) and to magnets Clause 4.23 (12 samples). These toys pose a risk of injury as they are composed of small powerful magnets that can be swallowed or breathed in by young children. When more than one magnet is swallowed, the magnets can attract each other and cause intestinal perforation, infection or blockage, which can be fatal.

Figure 6 - Examples of novelty toys



3.5. Conclusions on the test results

Mechanical and magnetic tests

According to the test results, 20 out of the 145 samples tested did not meet at least one of the requirements outlined in the testing plan.

Nine toys contained small parts (Clause 4.22) without the required warnings, markings and instructions. In addition, 14 toys did not meet the requirements of Clause 4.23 on magnets. Small magnets that significantly exceeded the limit allowed in the magnetic flux index cause particular concern: if more than one magnet is swallowed (or if one magnet and a metal ferromagnetic object are swallowed), the two can attract each other causing a blockage or perforation of the intestine and/or cutting the blood supply to parts of the intestine. All of these effects can cause serious injury, with possible fatal results. In all cases where items have attracted each other through the intestine, surgery has been required to remove them.

Furthermore, medical signs associated with intestinal perforation or blockage can easily be misinterpreted since many children exhibit only flu-like symptoms, or suffer from vomiting or stomach pain. Misinterpretations may cause delays in medical treatment, and this has led to serious medical consequences for children in the past. If it is believed that a child may have swallowed high strength magnets, immediate medical attention should be sought.

Other hazards demonstrated in the project include the exposure of young children to small parts, resulting in the risk of choking and exposure to plastic packaging (Clause 6 on packaging) that is too thin leading to suffocation risks.

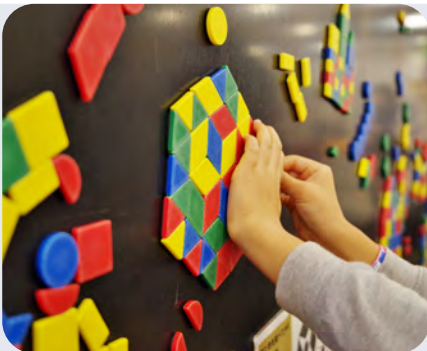
Finally, another area of concern highlighted by the project is represented by novelty toys, such as neocubes. These products are composed of a multitude of small balls, which in several cases presented a high magnetic flux index and did not meet the requirements of Clause 4.22 on small balls. These toys have a play value even for younger children. Together with ingestion, another foreseeable misuse of such small magnetic balls that should be taken into account during the assessment is their use as fake piercings by older children.

Warnings, marking and instructions

The MSAs performed checks on warnings, markings and instructions in their national language(s). The checks revealed that 77 samples (53%) did not meet the requirements. The most common non-compliance issues were incorrect or missing age warnings and warnings that were not in the appropriate national language(s).

The omission of correct age limitations can lead to a toy being unsafe (due to small parts or balls). In addition, warnings that are not clearly visible to consumers, use the wrong language or do not list the specific hazards associated with the product can be considered unsafe. The missing warnings for experimental sets that contain magnets is a particular concern in this activity as this means that parents/caregivers are not given crucial information on the correct use of the product.

Finally, a lack of traceability was identified as a main concern in this activity as it does not allow other MSAs to take measures in relation to products that have already been tested and reported in Safety Gate by MSA colleagues and that are present in the national markets of multiple Member States.

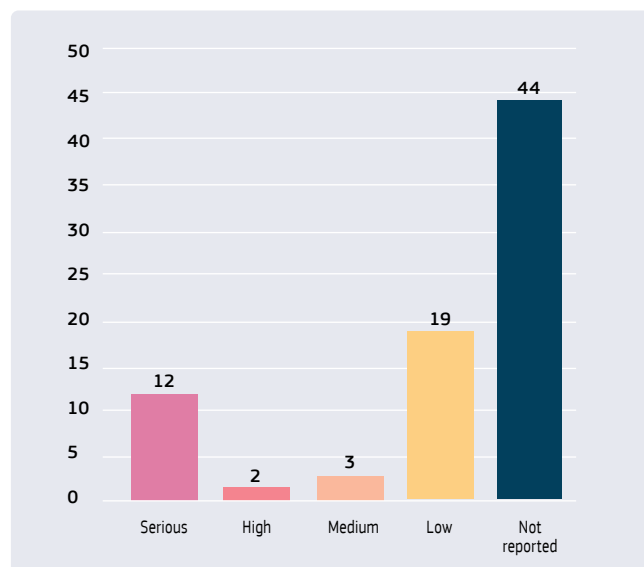


4. Risk assessment and measures

4.1. Risk assessment results

Toys placed on the Single Market shall comply with the essential safety requirements of the TSD². Toys shall not jeopardise the safety or health of users or third parties when they are used as intended or in a foreseeable way. When assessing whether a product poses a risk, the approach must be based on the common and reproducible risk assessment principles laid down in Decision (EU) 2019/417 (the RAPEX Guidelines)³. To develop the risk assessments, the MSAs used the Risk Assessment Guidelines (RAG) tool⁴ managed by the European Commission (EC). *Figure 7* shows the risk levels (based on the risk assessments performed by the MSAs) of the 80 samples that did not meet at least one of the requirements (laboratory testing or checks performed by the MSAs on warnings, markings and instructions).

Figure 7 - Overview of risk levels of samples that did not meet the requirements (N=80)

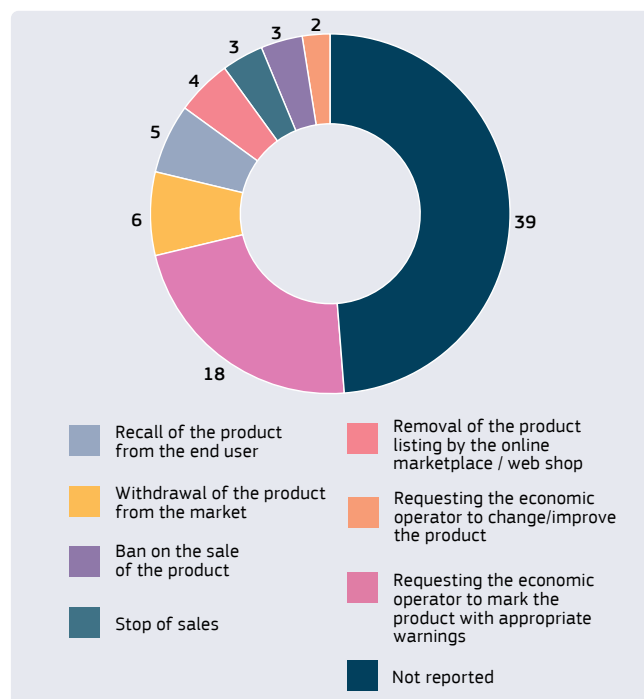


4.2. Corrective measures

Based on the test results and the risk assessments performed, the MSAs decide which measures have to be taken regarding the products that did not meet the requirements of the applicable standards designed to stop dangerous products from appearing on the Single Market. *Figure 8* displays the corrective measures taken for the products that did not meet the requirements.

Furthermore, when a serious risk is identified, MSAs are legally obliged to submit a notification in Safety Gate (pursuant to Article 12.1 of the General Product Safety Directive (2001/95/EC)). The RAPEX Guidelines also recommend submitting notifications on measures taken against products posing a less than serious risk. Following the actions triggered by the joint testing campaign, (up to 14 April 2023), 4 products were subject to Safety Gate notifications and notifications for 8 products are pending.

Figure 8 - Measures adopted for samples that did not meet the requirements (N=80)



² Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys – Text with EEA relevance (europa.eu)

³ EUR-Lex – 4390682 – EN – EUR-Lex (europa.eu)

⁴ RAG ECL V10 (europa.eu)

5. Conclusions and recommendations

5.1. Conclusions

Overall, the activity's outcome showed that 14% of the sampled toys with magnets did not meet at least one of the technical requirements outlined in the testing plan.

A higher number of non-compliance issues was detected for toys intended for children below 36 months of age (18%) than for toys intended for children above 36 months of age (13%). Toys sampled online showed a significantly higher failure rate (24%) than those sampled from physical shops (8%).

The testing campaign detected a wide range of non-compliance issues in relation to Clause 4.22 on small balls and Clause 4.23 on magnets. Overall, 10% of the products exceeded the limits allowed in the magnetic flux index. The presence of such high-powered magnets was often related to the samples containing small parts, which increases the likelihood of ingestion with a possible fatal outcome as a result.

In light of the test results, special attention should be paid to novelty toys consisting of many small magnetic balls, such as neocubes. These products are mostly not marketed as toys (not bearing the CE marking) and often misleadingly labelled as intended for children above 14 years, thus suggesting they are not toys but rather anti stress 'gadgets' for adults. However, they evidently have a play value and are also often accessible to younger children.

Furthermore, checks performed by the MSAs on warnings, markings and instructions in their national language(s) showed that 53% did not meet the requirements. Warnings, markings and instructions are an important part of the risk profile as they provide consumers with crucial information on how to safely use the product.

MSAs issued 4 Safety Gate notifications based on the outcome of this PSA (8 notifications are still pending) and asked the economic operator to withdraw or recall the products from the market, stop the sale or impose a ban on the sale when the products were assessed as posing serious, high or medium risk.

5.2. Recommendations for stakeholders

For consumers

Pay particular attention to the **warnings, markings and instructions** that accompany the products.

Be aware of the **risks posed by strong magnets** and communicate them to children of any age. Play should be supervised to ensure safety.

When more than one magnet is swallowed, they can cause a **blockage in the intestine**, perforate or damage the intestine and/or cut the blood supply to parts of the intestine. Seek immediate medical treatment if you believe that a magnet has been swallowed and in particular if a child is exhibiting flu-like symptoms, vomiting or stomach pain.

Regularly inspect toys with magnets during their lifetime. If used intensively, these toys might break and release magnets or magnetic pieces that are small enough to be swallowed.

Report any identified safety issue to the competent authority.

For economic operators

Be aware of your **obligations under the applicable legislation**. Take all necessary precautions to ensure that the products fully comply with the Toy Safety Directive and remove any products from sale that do not comply with the requirements.

Warnings, marking and instructions must be assessed carefully. Age warnings must be correct. Toys clearly designed for children under 36 months should follow the requirements for this category and may not bear the warning "Not suitable for children under 36 months".

Preferably use a magnet less than 50 kG²mm². If using magnets above 50 kG²mm², make sure that the magnet is big enough or add a part made of plastic/wood/other material around the magnet (which passes the torque/tension/drop/impact tests) in order to have a bigger magnet that can't enter the small parts cylinder.

The additional risks posed by magnetic toys should be clearly marked and communicated to consumers where relevant (e.g. for magnetic / electrical experimental sets).

Be aware that **neocubes have been defined as a toy** and should therefore comply with the Toy Safety Directive.



For European and national authorities

Communicate the **additional risks posed by magnetic toys** to consumers, including the symptoms if magnets have been swallowed.

Toys including small magnets with a high magnetic flux index can be found on **street markets** and **online marketplaces**. Pay attention to these sampling channels and include them in your market surveillance activities.

Further clarify the **classification of neocubes as toys**.

Include an essential requirement about magnets in toys in the new proposal for the Toy Safety Regulation, highlighting the risk related to these toys.

Update the **EU RAG tool** to reflect the hazards presented by strong magnets and the resulting injuries.

For standardisation organisations

The **testing method for small magnetic balls**, particularly those found in neocubes should be reviewed by CEN/TC 52 in order to account for the different magnetic flux indexes found in different balls of different colours of the same toys.

The testing method should also account for the **total magnetic flux index** between several structures of the same toy formed by more than one small magnetic ball and another magnetic element that fits within the small parts cylinder.

A **warning** to state the presence of high strength magnets should be envisioned for all toys that contain them.

Laboratories often list **conformity and traceability markings** (the address, unique number and CE mark) as a note under EN 71-1 and not as a pass/fail result. This is because they assume that a manufacturer will add them after they note it on the report. However, in many samples tested in this activity the conformity and traceability markings were missing and they should be highlighted as a non-compliance issue. It is recommended that conformity and traceability markings are included as part of the standard. The presence of the traceability markings is essential for effective enforcement.



1. What is CASP?

The Coordinated Activities on the Safety of Products (CASP) enable market surveillance authorities from European Union / European Economic Area countries to cooperate and to reinforce the safety of products placed on the Single Market.

CASP 2022 includes six product-specific activities and four horizontal activities

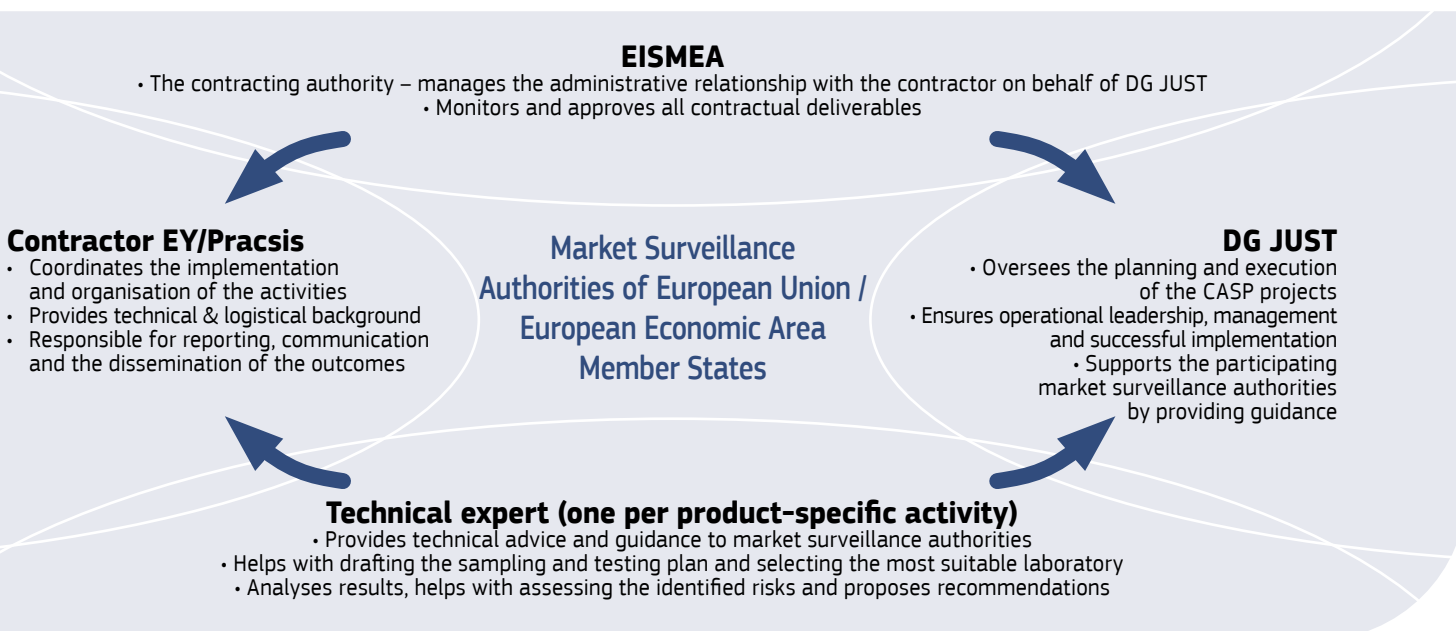
Product-specific activities test different types of products that may pose a risk to consumers. The products are selected and collected by the market surveillance authorities involved and are examined using a commonly agreed testing plan.



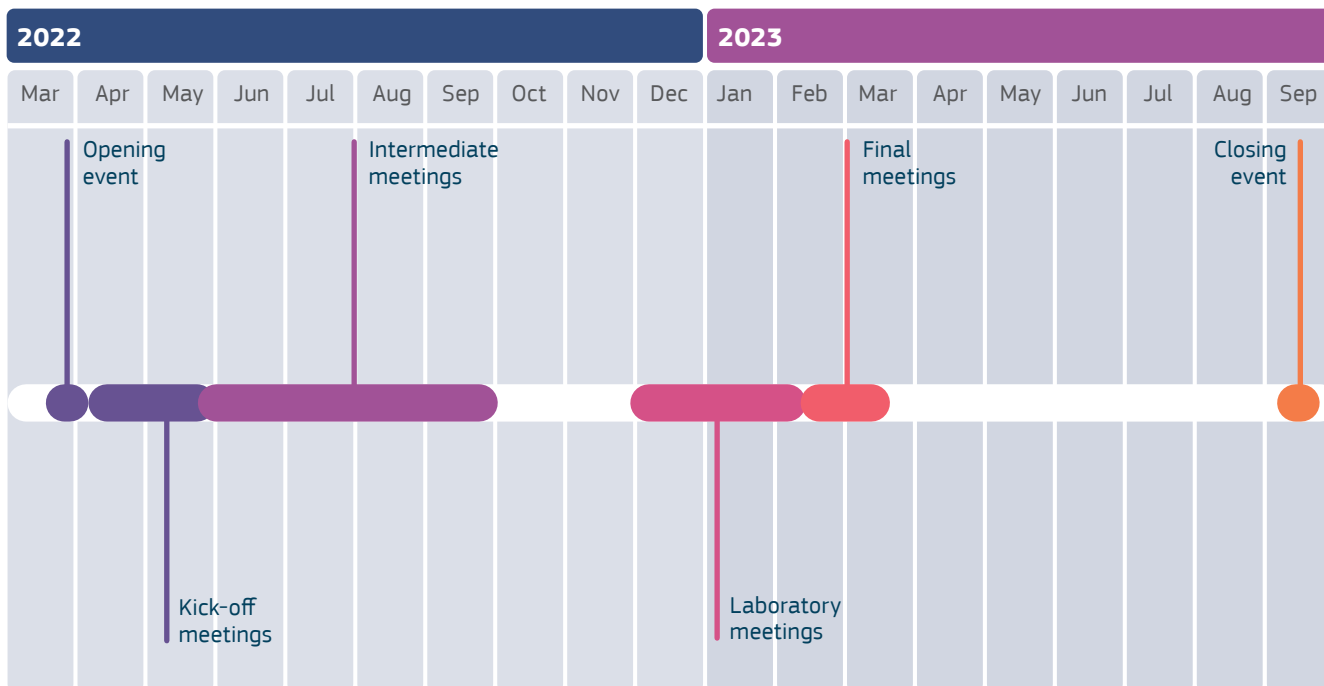
Horizontal activities provide a forum for market surveillance authorities to exchange ideas and best practices. Under the guidance of a technical expert, they develop common approaches, procedures and practical tools for market surveillance.



Roles and responsibilities



2. Product-specific activities work plan

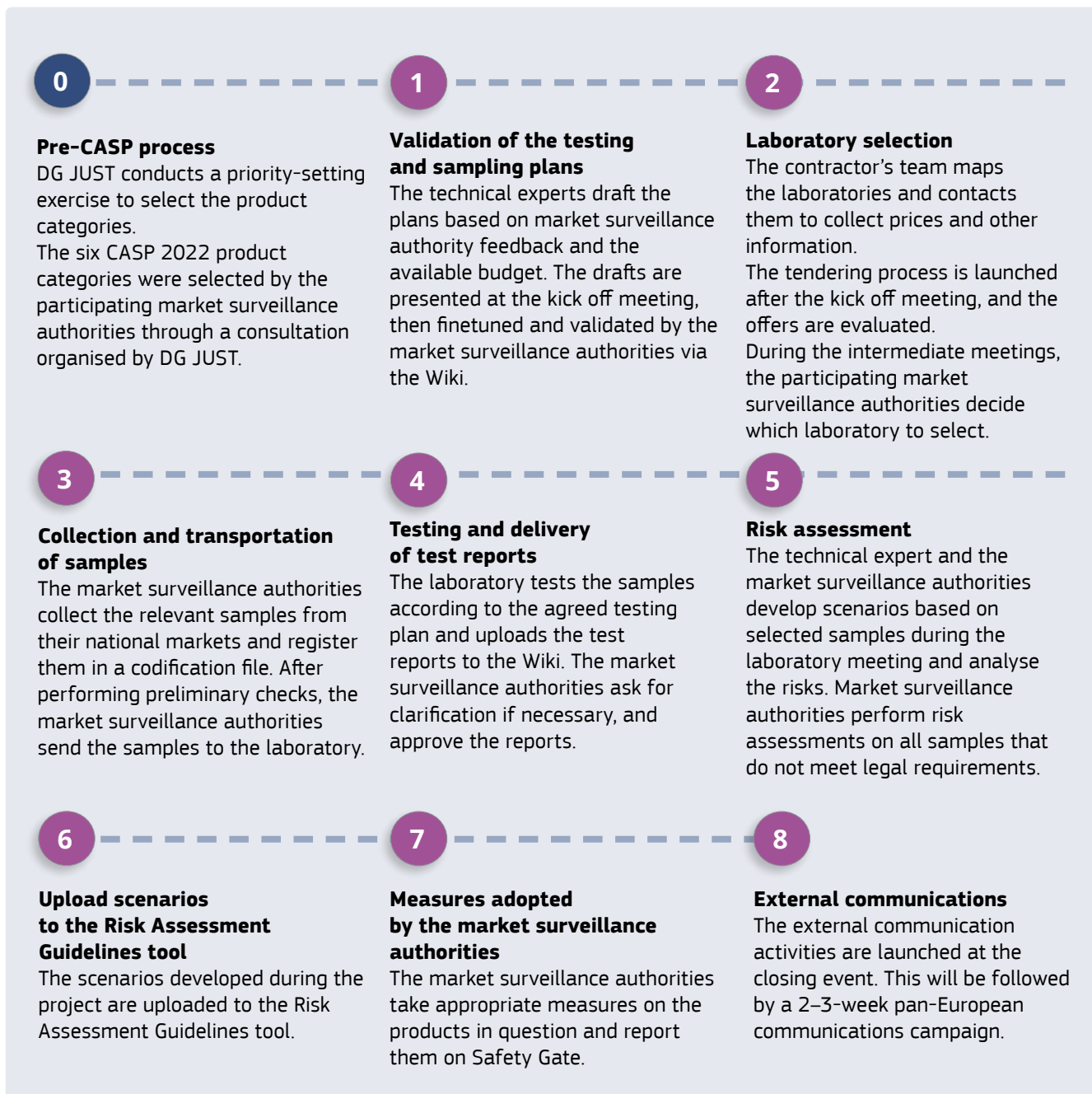


Continuous internal communication via the Wiki Confluence platform

INCEPTION	SAMPLING AND TESTING	REPORTING	EXTERNAL COMMS
Desk research	Laboratory tendering process	Risk assessment	Development of a comms toolkit
Scoping interviews	Laboratory selection and contracting	Coordination of measures adopted by market surveillance authorities	Development of communication messages
Draft testing and sampling plan	Sampling and transportation	Drafting of final reports	Launch of communications campaign
Laboratory mapping	Testing process and test reports	Disposal or return of samples to market surveillance authorities	Assessing the impact



3. Product-specific activities tools & processes



Tools

Audio-visual clips addressed to consumers and a general audience are produced for each product-specific activity and the overall CASP 2022 project.

Infographics addressed to economic operators are developed for the CASP 2022 project, for each product-specific activity.

Final reports are produced for each activity and for the CASP 2022 project. They are translated into all official EU languages plus Norwegian and Icelandic.

Channels

The communication material is disseminated using:

- [The EC CASP website](#)
- Market surveillance authorities national communication channels
- Relevant press and other stakeholders

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