

Safe and sound...

In the second of our quarterly safety features, TnP speaks to industry experts about key topics in toy safety. This month we sit down with Malcolm Horner, Toy Technical Consultant with Bureau Veritas Consumer Products, Philip Bullock, Technical Manager, Toys and Hardlines at Intertek, Lax Pattni Director at Northern Testhouse and Richard Smart Key Account Director at UL

**Malcolm Horner,
Toy Technical
Consultant, Bureau
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Products Services**



When do you know to test for Chromium VI and Organo Tin?

The Toy Safety Directive establishes migration limits for 19 heavy metals/compounds in toys or components of toys, depending on the toy material used. Limits for organo tin and chromium VI are quite low.

Typically, a toy manufacturer would ask their laboratory partner to test their toy for the 17 main elements under EN71-3, which includes testing the materials for tin and chromium. The test on the 17 elements is not able to distinguish between tin and organo tin and between chromium III and chromium VI. If the result of the first test reveals levels of tin and chromium which are close to or above the authorised levels of chromium VI and organo tin, then we would recommend carrying out an extra test to determine more accurate levels of chromium VI and organo tin. This two stage process is recommended to avoid carrying out unnecessary testing, and thus saving money.

Do you have to test your toys for absolutely everything?

If you have a detailed Bill of Materials (BOM) from which you have been able to carry out a chemical safety assessment, then you may have identified that some analytical testing might be unnecessary – for instance because your toy doesn't contain any materials of concern.

Carrying out a chemical safety assessment requires you to have a BOM that you can trust and some knowledge in chemistry – without however the need for being a professional chemist. The British Toy & Hobby Association (BTHA) and Bureau Veritas have developed



Toyograph, an online tool enabling companies to use a Bill of Materials (BOM) to determine which materials are at risk of containing restricted chemicals above the limits specified in legislation or at levels that may be a safety concern.

From the mechanical and electrical aspects, different requirements are applicable to different categories of toys and all applicable requirements should be assessed. However, many clauses of EN 71-1 and EN 62115 will often not be applicable to the toy being tested.

Can the BOM always be trusted?

As the BOM is the basis of your chemical safety assessment, you should be confident in its authenticity and accuracy. Some Far East manufacturers don't make the effort to go into many details: we have seen some of our clients provided with suspiciously "very light" BOMs from their manufacturers. To judge the relevance of the BOM, some common sense must be applied. You must ask yourself: "does the BOM make sense?" For example, let's imagine that you are checking the BOM for a play doll: you must check if all the components of the doll are described on the BOM – not only the body and limbs of the doll but also the clothes, hair, eyes and eyelashes. If something is missing on the BOM, then it's

not a good sign. Again if you have a toy with several colours of materials, check if all the paints and/or pigments are listed.

The above might seem obvious, but we often see in our laboratories BOM that do not match the toy they are supposed to describe.

If you have been working with your suppliers for a long time and if you have a good partnership in place, I think you will be more inclined to trust their BOM. On the contrary, if you are importing a toy from a manufacturer you have never worked with, it might be recommended to test all your components and materials for EN71-3 and other restricted chemicals until sufficient confidence is achieved.

Is your laboratory noticing an increase in failure while testing to the updated acoustic standard?

The major change to the standard is the introduction of new requirements for toys not previously within the scope of the standard, such as percussion toys and wind toys like drums, xylophones and whistles. Revised test methods have also been introduced for voice toys such as megaphones and walkie-talkies. We have noticed a significant number of these toys failing to comply. Furthermore, the revised standard does contain some subjective requirements with respect to exposure categories; these determine the specified limits for the type of toy under test. There are also some problems with the actual test methods for certain types of acoustic toy. CEN are aware of these problems and are hoping to address some of them by means of interpretations. However, it is likely that a further revision of the acoustics requirements and test methods will be necessary before too long.



Philip Bullock, Technical Manager - Toys & Hardlines, Intertek

When do you know to test for Chromium VI and Organo Tin?

A common approach is to "screen" toys using the methodology in EN 71-3 and specifically test for chromium VI or organic tin only when the need for this is indicated by the screening results for chromium and tin. If these initial results are less than the specified limits for chromium VI and

organo tin, then further testing is unnecessary. In addition the decision should consider the materials used in the manufacture of the toy and the manufacturing controls which are in place. A BOM should identify, for example, what pigments are used and from this it can be determined whether they are likely to result in levels of chromium VI. However, without knowledge of the manufacturing processes and controls which are in place, it could not be guaranteed that a toy would comply with the limits in the toy directive 2009/48/EC as a BOM based approach alone would not take into account contamination or substitution of raw materials which is known to have occurred in the past.

Do you have to test your toys for absolutely everything?

No. One of the purposes of the safety assessment detailed in article 18 of the toy directive 2009/48/EC is to determine what testing is appropriate and necessary based on knowledge of the materials and manufacturing process. For example, a wooden

toy would not require testing for phthalates under REACH Annex XVII since these chemicals would not be used in the processing of wood. Some standards themselves restrict the types of toy to be tested e.g. EN 71-3 generally does not apply to toys which are unlikely to be licked, sucked or swallowed.

Can the BOM always be trusted?

As a laboratory, we cannot determine whether a BOM is a true reflection of the materials used in manufacturing the toy in question. We do however experience a lack of understanding of the level of detail required since it is not uncommon to receive a BOM which simply states "plastic" and "yellow pigment".

Is your laboratory noticing an increase in failure while testing to the updated acoustic standard?

Yes. In our experience failures to the revised acoustics requirements in EN 71-1:2011+ A2 are mainly due to the number of toys which are now subject to requirements which previously were not. Examples of these include toy drums, whistles, xylophones and trumpets. Previously, these were excluded as mouth actuated toys or child actuated toys on the basis that the noise level is determined by the child and not simply the toy. Until manufacturers take into account these new requirements (which come into effect in September), we would expect to see failures in these types of toys.

Richard Smart, UL Key Account Director.

When do you know to test for Chromium VI and Organo Tin?

We use the results from testing to EN71 Part 3:2013 to indicate whether the additional testing requirements are applied. If the results for EN71 Part 3 are below the limits for Chromium VI and Organic tin, taking into account several factors, then we would not perform additional testing as the material can be deemed to comply.

Do you have to test your toys for absolutely everything?

No, there is no requirement to test for everything, certain tests or standards would only be applied to specific product or material types. Compliance with appropriate directives and regulations is required, however testing is not the only solution. We work with our customers



to ensure that we apply the relevant requirements for their products, if they want to apply additional requirements then we help to support this.

Can the BOM always be trusted?

It depends on your supplier and the level of information that they are able to go down to. A bill of materials is only as good as the information and supporting data, if there are gaps or the material supplier cannot provide enough information on the constituent materials then there is always the potential for gaps.

Is your laboratory noticing an increase in failure while testing to the updated acoustic standard?

The failures we have experienced have been mainly associated with the new categories of products which previously did not require testing, examples would be whistles and percussion items.

Lax Pattni, Northern Testhouse

When do you know to test for Chromium (VI) & Organic Tin?

The migration test of all 17 elements is the initial starting point for determining whether chromium (VI) and organic tin tests apply or not! Where confirmation is necessary, then there are options such as testing or assessing material information for certain material categories and with this knowledge we can then come to an informed decision

Do toys have to test for everything?

No. We review each toy received against the requirements of the relevant standard. This review dictates which tests must be performed and which are not applicable.

Can BOM always be trusted?

No. The actual BOM does not assure that the materials and or their source have remained constant. The veracity of the BOM must be confirmed by periodic independent testing.

