

3.3 Guidance

Laboratory testing of raw materials regarding chemicals of concern

This document is part of the *International Chemicals Management Toolkit for the Toy Supply Chain* developed by the United Nations Environment Programme (UNEP) in collaboration with the Baltic Environmental Forum (BEF) within the framework of the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).

Laboratory analysis is a means to obtain additional information on chemicals in raw materials, such as mixtures, polymer compounds or non-chemical products, or to test the final products regarding legal compliance. There are many types of analytical techniques and methods that are used depending on the chemicals to be analysed, the product, and the requirements regarding the limit of detection. These analytical techniques include, for example, titration, toxicological bioassay testing, or chemical migration testing. Laboratories may employ a broad range of analytical devices to perform, for example, chromatography, or spectrometry to identify and quantify the content of chemicals in input materials.

Testing facilities

Companies may conduct testing themselves (if a laboratory exists in the company) or contract an external laboratory to analyse input materials (regarding the content of specific chemicals) as part of the quality control procedures. Laboratories should be accredited according to the quality standard ISO/IEC 17025 for chemical testing, to ensure that they implement good laboratory practice and deliver reliable results. They should use standardised analytical methods to ensure acceptance and comparability of the results in particular if analytical reports are legally required as a proof of compliance. National or regional accreditation bodies usually have lists of accredited laboratories and may provide information on the accreditation types, standards, methods and contact information. Examples are

- International organisation for accreditation bodies (ILAC)
-
- German DAkks list (English),
- or the European NANDO

Testing can be done in a non-accredited laboratory as well, but the test results may not be recognised by the actors in your downstream supply chain.

Purposes of chemical analyses and testing

Testing may serve various purposes, for example:

- quantification of the concentration of particular chemicals in input materials, e.g. to check if the supplier's claims are correct
- analysing if (new) input materials contain residues or contaminations of non-intentionally used chemicals
- investigating performance parameters of chemicals/ products, e.g. flexibility of polymers, ageing of polymers etc.
- measuring the migration rate of substances in materials to identify if respective legal requirements are met
- demonstration of compliance, e.g. absence of (a list of) chemicals of concern to underpin a declaration of conformity for customers
- measuring the emission of volatile organic compounds as a sum parameter indicating the (residual) content of solvents in products

The need for a chemical analysis, its scope and frequency may be defined by requirements in legislation. If no legal requirements must be met, every company may define if, what and when to do laboratory testing. Reasons for testing may include customer requests, observed low quality of input materials or low trust in the suppliers, or that CoCs have been identified in the products by inspections.

Planning chemical analyses

Before a chemical analysis is conducted in a laboratory for a particular input material (or its own product), it is important to clearly define what should be measured. To ensure that the analysis provides the needed results, the necessary parameters must be carefully selected.

It is obvious which parameters to test if there are legal requirements or standards that must be fulfilled. In this case, the analysis should cover all required information. Laboratories that are experienced in the toy sector are likely to know how best to implement the respective chemical analyses and can offer respective 'packages' with compliant reports and certificates.

If the testing is not necessary to fulfil legal requirements, the selection of parameters for the analysis may be guided by:

- Customer requests to assess and declare that substances on restricted substances lists are not contained in the product and/or any respective provisions in supply contracts.
- Company policies to avoid certain chemicals of concern.
- Management procedures requiring regular monitoring of the quality of input materials and/or of the own products.
- If the suppliers (are known to) implement good manufacturing practices,
- Information on what chemicals are likely to occur in a particular input material, such as plastics.

Frequency of testing

Similar to the question of what should be tested, also the frequency of testing depends on various factors, including legal requirements, customer requests or company policies as well as incidents where non-compliance with chemical requirements was observed in input materials. While it is recommended to perform tests on 'critical' chemicals of concern, i.e. those endangering legal compliance, in any new input material, further controls may be implemented when the product composition or the supplier's production process are changed.

References

Organisation for Economic Co-operation and Development. *Good Laboratory Practice (GLP)*. <https://www.oecd.org/chemicalsafety/testing/good-laboratory-practiceglp.htm>. Accessed 18 October 2022.

International organisation for accreditation bodies. <https://ilac.org/>. Accessed 18 October 2022.

U.S. Consumer Product Safety Commission. List of CPSC-Accepted Testing Laboratories. <https://www.cpsc.gov/cgi-bin/labsearch/>. Accessed 18 October 2022.

European Commission. Database of accredited bodies for testing the safety of toys in the EU. https://ec.europa.eu/growth/tools-databases/nando/index.cfm?fuseaction=directive.notifiedbody&dir_id=140521. Accessed 18 October 2022.

DAkKS. Database of accredited bodies in Germany. <https://www.dakks.de/en/accredited-bodies-search.html>. Accessed 18 October 2022.