

HUMAN HEALTH

ENVIRONMENTAL HEALTH

CHILDREN'S PRODUCT SAFETY
**KNOW MORE
PROTECT MORE**





Anne calls it the knowledge and support to get her lab up and running.



Evan calls it the most current methods and instruments to ensure compliance.

WE CALL IT ECOANALYTIX



David calls it a strategic alliance to make the world a better place.



Jess calls it safe and sound.

MAKING THE WORLD A SAFER PLACE TO PLAY

Children's product safety is not a new concern. But it has become a more complicated challenge for manufacturers large and small. Today's toys and other children's products are made with a wider variety of materials, including new polymers and chemicals. Regulatory bodies are imposing tougher standards, including the Consumer Product Safety Improvement Act in the U.S. The number of materials and products subject to regulation is expanding, while regulatory scrutiny itself is increasing. At the same time, economic pressures are driving the need for higher productivity and greater revenue. From third-party testing labs doing more with smaller sample sizes to manufacturers bringing testing in-house, the landscape of children's product safety is changing.

How do you stay in compliance while remaining productive? Call on EcoAnalytix from PerkinElmer.



In Compliance Today and Tomorrow

EcoAnalytix™ from PerkinElmer provides you with a full suite of solutions that makes it easier to keep pace with the evolving regulations for children's products. By combining tailored systems, standard operating procedures (SOPs), application notes, validation services and ISO 17025 support with our OneSource® service, we ensure that from current regulations to future implementations, your laboratory is ready to do more.

We keep you abreast of technological advances that provide faster or easier methods to meet regulatory challenges so your lab is ready today and tomorrow.

It all adds up to a lab that runs smoothly and productively, while making the world a safer place for children everywhere.





Keep Pace with Children’s Product Safety Regulations

Turn to EcoAnalytix for up-to-date information on critical developments within safety compliance. We have a deep commitment to ensuring your success in a rapidly changing regulatory environment.

U.S. Regulations Highlights

- August 2008 – The U.S. Congress enacted the Consumer Product Safety Improvement Act (CPSIA 2008), establishing new limits for lead in products marketed to children 12 years and younger and adding the regulation of six phthalates in toys and certain child-care articles that can be placed in the mouth.
- February 10, 2009 – Lead limit of 600 ppm in paint and children’s products and six phthalates limit set to 0.1% (Table 1); ASTM® F963-07 for testing surface coating materials becomes mandatory (antimony, arsenic, barium, cadmium, chromium, mercury, selenium).
- August 14, 2009 – Lead limit lowered to 90 ppm in paint; children’s products may not contain more than 300 ppm of lead.
- February 10, 2010 – Mandatory testing by a certified third-party testing lab or firewalled manufacturer’s lab.
- August 14, 2011 – Children’s products may not contain more than 100 ppm of lead (if technically feasible).

European Regulations Highlights

- Toys sold in Europe must meet the regulated levels under EN 71. EN 71 Part 3 sets required levels for inorganics (Table 2). EN 71 Parts 9, 10, 11 set levels for organics.
- In December 2008, a new EU Directive was signed setting new limits and adding new compounds to the lists of both metals and organics. The new legislation will go into effect in 2011, with chemical testing required in 2013.

Table 1. Maximum limits of regulated phthalates in the U.S.

Phthalate	Restriction for	Max. Limit
Diethylhexyl (DEHP)		.01%
Dibutyl (DBP)	Toys and childcare articles made of plastic materials	.01%
Benzylbutyl (BBP)		.01%
Diisononyl (DINP)	Toys and childcare articles made of plastic materials that can be placed in the mouth by children	.01%
Diisodecyl (DIDP)		.01%
Di-n-octyl (DNOP)		.01%

Table 2. Limits of element migration from toy materials, according to EN 71 Part 3.

Toy Materials	Elements (mg/kg)							
	Sb	As	Ba	Cd	Cr	Pb	Hg	Se
Modeling clay & finger paints	60	25	250	50	25	90	25	500
Any other toy materials	60	25	1000	75	60	90	60	500

Systems Fit for Every Testing Demand

EcoAnalytix solutions cover the entire spectrum of children's product testing, including the detection and analysis of lead and other metals, plasticizers, solvent residues and glycols. The PlaySafe™ Analyzer for Toxic Metals, as well as our Phthalates GC/MS and Bisphenol A UHPLC Solutions are examples of the leading systems offered by EcoAnalytix. All are proven to deliver unmatched precision to assure the safety of your products. Every system is designed to meet your demands for high throughput, versatility, ease of use, automation and long-lasting dependability so your lab is future proof.



PlaySafe Analyzer for Toxic Metals

Phthalates GC/MS Solution



PlaySafe Analyzer for Toxic Metals

EN 71-3; ASTM F963; CPSIA 2008

Lead and other toxic metals have long been regulated in paint for children's products, but new regulations now require even lower levels and extend to more than just paint and toys. Now the substrate that the paint covers also needs to be tested to ensure it meets acceptable levels, and an expanded list of products sold to children age 12 and under is included.

With PerkinElmer's PlaySafe Analyzer for Toxic Metals, based on the Optima™ 7300 DV ICP-OES, you can now easily test up to 50 samples per hour – from raw materials to final product or anywhere along the process. We have simplified

The only dedicated system to meet regulatory requirements

the full set of standard operating procedures (SOPs) and provided all of

the consumables and standards you need to run your first samples easily the day of installation. No additional method development work is required. This system was developed in conjunction with top toy manufacturers. Special attention was given to not only the ability to run the system easily, but to the transfer of methods to sites around the world in multiple languages, including Chinese.

- Speed and throughput capabilities to handle up to 50 samples per hour
- Archives reported and unreported results, so no need to rerun the sample when looking for additional analytes at a later date
- SOPs allow rapid setup of test methods
- Specific installation and qualification procedures to get the application up and running quickly

- Supplied consumables package with calibration standards provides rapid ramp-up of sampling and analysis

To help you meet the evolving requirements for the determination of toxic metals in children's products, PerkinElmer offers a full range of systems from AA to ICP-MS.

Phthalates GC/MS Solution

2005/84/EC; EN 71-11, Section 5.8; CPSIA 2008

Chemicals called phthalates are added to PVC to make it soft. Phthalates are not bound to the plastic and therefore can leach out when chewed or sucked.

PerkinElmer's Phthalates GC/MS Solution, based on the Clarus® 600 GC/MS System, delivers robust methodology and accurate, reliable results with detection at levels considerably lower than the regulations. It offers

the widest mass range, the fastest conventional GC oven

Ensures plasticizer levels do not exceed regulated limits

and highly reliable and customizable software. It is not just an instrument but a complete solution for rapid setup and sample testing.

PerkinElmer's Phthalates GC/MS Solution offers:

- Reliable autosampler for 24/7 unattended operation at maximum precision
- Best-in-class conventional GC oven that minimizes non-productive instrument time with the fastest cooling rates
- Proven software package, including all of the capabilities to customize reports

Metals Screening with Innov-X Import Guard XRF

EN 71, Section 5.4

Hand-held energy dispersive XRF, requiring minimal or no sample preparation, can provide a way to screen products onsite and determine whether further quantitative analysis is required.

The Innov-X® Import Guard XRF delivers:

- Entirely non-destructive testing in seconds, allowing testing of hundreds or thousands of samples a day
- Safest portable XRF on the market – proven lowest scatter radiation levels
- Most error-free operation – patented algorithm recognizes sample material characteristics and optimizes the system automatically
- Storage for over 100,000 test results in encrypted format so results cannot be altered
- Most powerful tube-based system for lowest detection levels of lead



Metals Screening with Innov-X Import Guard XRF



Metals & Phthalates Sample Preparation

Metals & Phthalates Sample Preparation

For the determination of both metals and phthalates, microwave sample preparation is cleaner and easier. The Multiwave™ 3000 Microwave delivers fast and easy sample preparation:

- Improves sample extraction and reduces solvent usage over current methods
- Automates and increases throughput – quick cycle times with rapid cooling in minutes
- Most durable microwave with PTFE-coated cavity
- Precision control with fast homogeneous heating
- Safety built in – sophisticated sensors for complete reaction control, library of tested methods



Bisphenol A UHPLC Solution

Bisphenol A, commonly abbreviated as BPA, is a key monomer in the production of polycarbonate plastic. Polycarbonate plastic is clear and nearly shatterproof, and is used to make a variety of common products including baby and water bottles, medical devices and dental composite and sealants. Ensure your product is free of BPA and phenol. Our Bisphenol A UHPLC Solution, based on the Flexar™ FX-10 UHPLC System, features:

- Ultra-high sensitivity to detect ppb levels of BPA as well as a wide range of linearity for uncompromised quantitation
- Column oven, providing maximum retention time (RT) stability
- Ultra-low-carryover autosampler which achieves optimal accuracy in quantitative analysis
- Dedicated PerkinElmer Brownlee™ column technology for unambiguous peak separation



Bisphenol A
UHPLC Solution

Semivolatiles in Toys GC/MS Solution

Semivolatile organic compounds (SVOCs) are compounds with higher vapor pressures than VOCs and therefore are released as gas much more slowly from materials. A variety of SVOCs are used in toys to provide flexibility (phthalates), water resistance or stain repellence, as well as to inhibit ignition or flame spread. Our Semivolatiles in Toys GC/MS Solution is based on the best-in-class Clarus 600 GC/MS, offering:

- Fastest conventional GC oven, minimizing non-productive instrument time with fast cooling
- Best-in-class MS scan speed to accurately define complex analyses
- Intuitive touch-screen interface for enhanced user experience
- Application-specific GC column technology for improved sensitivity
- Programmable split/splitless injector, providing large-volume injection capabilities to increase system sensitivity



Semivolatiles in Toys
GC/MS Solution

Volatiles & Solvents in Toys HS-GC/MS Solution



Volatiles & Solvents in Toys HS-GC/MS Solution

EN 71-11, Sections 5.5.4 and 5.5.5, and Annex A.2

To verify that paints and other coatings meet standards, our Volatiles & Solvents in Toys HS-GC/MS Solution, based on the Clarus 600 GC/MS coupled with a TurboMatrix™ Headspace Trap Sampler, provides both static headspace and total headspace trapping for a wide range of application sensitivity. The overlapped vial thermostating feature automatically optimizes the use of the multiposition oven. This allows the next sample to inject as soon as the GC oven becomes ready, providing unparalleled sample throughput. In addition, the diverse portfolio of headspace instrumentation delivers flexibility in throughput choices. The novel GC oven design improves separation and decreases run time in low-temperature GC analyses. Also, easily transferable instrument methods allow multiple instruments or multiple sites to effortlessly share methods.

Chromium VI and Formaldehyde UV Solution

EN 71-11, Section 5.5.3; ASTM F963

Hexavalent chromium, otherwise referred to as chromium VI or Cr6+, is used for the production of stainless steel and textile dyes, wood preservation, leather tanning and for anti-corrosion and conversion coatings.

Formaldehyde is one of the most used basic compounds in the plastics industry and is utilized to produce different types of plastics, textile additives, glues, etc.

For unmatched detection and analysis of chromium VI and formaldehyde, our Chromium VI and Formaldehyde UV Solution, based on the gold-standard LAMBDA™ 35, features secure data archiving for long-term traceability of analysis and sub-ppm detection limits to meet your analytical needs. Its true double-beam optical bench is designed for long-term precision and accuracy. The large range of sampling cells accommodates the widest range of sample types and reduces sample preparation time. Choose from manual or fully automated systems, featuring multi-cell changers and a liquid autosampler for high-volume applications.



Chromium VI and Formaldehyde UV Solution



Consumables

At PerkinElmer, we have been serving a number of dynamic and diverse industries for over 70 years and have a deep understanding of a laboratory's requirements. With our precision-designed products, simple ordering process and best-in-class customer service, you can enjoy the peace of mind that comes with solid, reliable support. You can be confident that you'll get the results you need – accurately and on time. Plus, PerkinElmer consumables and accessories are guaranteed for PerkinElmer instruments, and many can be used with other manufacturers' instruments.



Consumables

Laboratory Information Management System (LIMS)

Now that you have the tools to collect information about your products, let us help you pull your laboratory data together and distribute it quickly and efficiently. Our LABWORKS™ LIMS evaluates and flags results, sending automatic notifications and scheduling confirmatory or backup tests as required.

Operating from multiple sites or countries? LABWORKS LIMS can provide users with local-language screens that ensure proper procedures are followed.

Not in the lab? Our zero-footprint WebTop™ lets you monitor performance and make decisions from your wireless browser-enabled device. Not only will LABWORKS ensure

that decision makers receive critical information when they need it, but it will also save time and money by organizing work orders, managing testing profiles and automating how test results are evaluated. LABWORKS history views visually reflect product or supplier test histories, so compliance over time can be monitored.

LABWORKS™ LIMS

Global Service and Support

At PerkinElmer, we have manufactured and serviced laboratory instruments across the globe for over 70 years. We have a deep understanding of your laboratory's requirements, and provide you with precision-designed products, a simple ordering process and best-in-class customer service. And with 1300 service engineers and over 550 sales representatives in 125 countries, you can enjoy the peace of mind that comes with solid, reliable



support. Furthermore, our OneSource comprehensive support gives you the efficiency of one contract and one contact for all your service needs. OneSource is the only single service point with the certified expertise to repair, maintain, qualify and validate equipment from PerkinElmer and virtually any manufacturer.

From routine sample testing to moments of scientific breakthrough, count on PerkinElmer to supply you with the service, support, accessories and consumables you need to achieve success today and tomorrow.

Product Safety Analysis and Compliance

EcoAnalytix offers expert consultation and customized solutions for your laboratory. Whether you're testing new materials or verifying existing ones to meet industry standards, we have the proven technology you need to stay in compliance from raw materials through final product.

A complete listing of supporting materials, including application notes and webcasts, is available on our Website. [Learn more at www.perkinelmer.com/toys](http://www.perkinelmer.com/toys).

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