



**Enforcement of the Restriction of Certain Hazardous
Substances in Electrical and Electronic Equipment
Regulations 2008 (RoHS)**

National Weights and Measures Laboratory

31 March 2009



WORKING WITH EEE PRODUCERS TO DELIVER COMPLIANCE WITH ROHS IN THE UK

Summary

This report covers the activities of the National Weights and Measures Laboratory (NWML) from 1 April 2008 to 31 March 2009 as the enforcement authority for the Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008 (RoHS).

NWML's goal was to deliver a supportive modern enforcement authority that helped industry to meet the objectives of the RoHS Directive and Regulations whilst ensuring it did not place undue burden upon compliant producers.

During 2008 – 2009 NWML has delivered these objectives through education, promotion and direct engagement with the producers of electrical and electronic equipment and with other engaged interested bodies. Some highlights of the delivery include the following:

- An enquiry service that has responded to and logged over 1000 individual enquiries from a broad range of sources.
- An information website providing information and support to industry that received over 9 million hits in the first year and continues to maintain around 6 million hits per year.
- Provided speakers for conferences raising awareness and providing support through intermediaries.
- Attended exhibitions to raise awareness within specific market sectors.
- Effective use of our own screening test laboratory.
- Direct investigation of over 250 individual companies resulting in the establishing of 12 improvement plans, 3 EU notifications, 4 product withdrawals, 5 Compliance notices and 3 warning letters.
- Chairing the EU cooperation group of enforcement bodies to promote the consistency of RoHS delivery.

NWML believes it is working towards the objective of effective enforcement and higher levels of compliance in the period of this report. Over the period since coming into force on 1 July 2006 the authority has identified significant improvements in the levels of compliance within products. NWML now looks to the future to build upon this success.

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Introduction

This report looks back over the period of the financial year 1 April 2008 to 31 March 2009. It covers the activities carried out under the Memorandum of Understanding between the National Weights and Measures Laboratory (NWML) and the Department for Business Enterprise and Regulatory Reform (BERR) covering the enforcement of the Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008.

The regulations came into force on the 1st July 2006 and affect most electronic equipment placed on the European market after that date. They do not affect electronic equipment that was already in the distribution chain. The regulations have no retrospective element and do not apply to spare parts for electronic equipment placed on the market before the coming into force date.

Part of NWML's vision for RoHS was published on www.rohs.gov.uk outlining the principles by which RoHS regulations would be enforced.

The National Weights and Measures Laboratory (NWML) is committed to ensuring RoHS compliance in the UK. We want to work with industry and not against it, progressing in partnership towards full compliance.

We are fully committed to the principles identified in the Hampton Review "Reducing administrative burdens: effective inspection and enforcement", the Arculus Review "Less is More" and the Enforcement Concordat.

It is our policy that:

- *Enforcement should be intelligence led and based on an assessment of risk*
- *Form filling and data requests will be kept to a minimum*
- *Information and data can be sent to us electronically or in whichever way is convenient to the supplier*
- *Enforcement actions will not be disproportionate*

We will assist industry to comply with the regulations by:

- *Providing the best information and advice we can*
- *Working with stakeholders*
- *Supporting compliance seminars and other events*
- *Being accessible and responding to enquiries*

We will help those that are aiming to comply and pursue vigorously those that intend to flout compliance.

Who are NWML?

The National Weights and Measures Laboratory has responsibility for ensuring that all trade measurements are accurate, legal, and fair to buyers and sellers.

Based in purpose built laboratories in Teddington, south west London, NWML staff have responsibility for:

- Enforcement of the Batteries and Accumulators (Placing on the Market) Regulations 2008.
- Enforcing the Market Surveillance provisions of two metrology directives
- Preparation of weighing and measuring legislation under the UK Weights & Measures Act and EEC Act 1972
- Representing the UK in the European Community and in the International Organisation for Legal Metrology (OIML)
- Maintaining traceability in trade measurement
- Achieving conformity to directives and standards

The contract to enforce RoHS complements NWML's customary work, and staff in the RoHS enforcement team are drawing upon their wide technical and legal knowledge from NWML's work, such as interpreting legislation and technical standards, helping customers achieve compliance with the legislation and dealing with enforcement.

Who are BERR?

BERR is the Department for Business, Enterprise and regulatory Reform. It brings together functions from the former Department of Trade and Industry, including responsibilities for productivity, business relations, energy, competition and consumers, with the Better Regulation Executive (BRE), previously part of the Cabinet Office.

The key elements of BERR's Strategic Programme are as follows:

To promote the **creation and growth of business and a strong enterprise economy**. This includes work to strengthen the UK's enterprise culture and environment, simplifying business support and delivering stronger regional economies through enhanced economic performance. This also includes UK Trade & Investment's support for UK business to take full advantage of overseas opportunities and efforts to attract continued inward investment.

To lead the **better regulation** agenda. This includes work to reduce the administrative burden of regulation faced by business by 25 per cent, ensuring enforcement of regulation is consistent and proportionate and ensuring new regulations are only brought in when benefits justify the costs.



To champion **free and fair markets**, working with other countries to liberalise international markets and support development, developing rules to maintain competition and promote competitive business environments in the UK and EU, and to empower employees and consumers.

To be the **shareholder** in a number of Government-owned businesses that makes a significant contribution to the UK economy.

The Enforcement Culture for RoHS

From the implementation of the RoHS directive in the UK it was clear that the strategic objective of the enforcement agency was to increase the levels of compliance throughout the electrical and electronic equipment (EEE) sector.

In the early days industry was often quoted as suggesting:

“Only 10% of products are compliant but 90% of products are 95% compliant.”

Prior to 1st July 2006 the Enforcement Agency began the task of increasing awareness of the regulations and their practical impact on business processes and product manufacture.

NWML’s partnership with industry has continued to be key to the delivery of the enforcement service but the focus changed as the authority has followed the industry’s journey through a transitional phase into a more mature regulated market.

The Authority now engages more pro-actively with individual producers, identifying where effective control systems have been implemented to ensure compliant product was placed on the market. NWML would assess the systems being implemented and thereby evaluate the risk of non-compliance. By this method the authority was able to establish an understanding from businesses of what was possible in terms of best practice and what could be translated to other producers.

Results of this proactive engagement have generated a number of instances where the authority has needed to look more closely at specific products. In these cases the authority has undertaken test purchases and analysis using both our own test house and independent third party test houses. Where non compliance has been discovered, depending on the circumstances, further action has resulted in a range of outcomes, from cases brought to justice to informal warnings and improvement plans.

In all our dealings with EEE producers we attempt to be fair and proportionate. Wherever possible we offer advice and support but retain the ability to take matters further. We believe this approach has placed both direct and indirect pressure on producers of EEE to increase the level of compliance with the legislation. We measure our success in this area through the positive comments received from organisations we have engaged with and the fact that we have not had to engage in disputed criminal cases but have found effective solutions to ensure future product complies with the requirements of the legislation.

Major Issues for UK Producers and the Authority

A number of major issues affecting UK producers have been identified through direct engagement with industry through conferencing, enquiries and direct interventions.

Scope of the Directive

The main issue for the enforcement authority and producers throughout the European Union was and still is the scope of the directive. It is initially drawn from the WEEE directive with some alterations but further clarification has been provided by the Commission in the shape of FAQs directed at the issue of scope. In the UK the enforcement authority has attempted to apply the guidance provided by the Commission in all its dealings with scope. It has taken a pro-active stance in Europe and the Enforcement Network to ensure that UK businesses are not disadvantaged by the interpretation of the directive, whilst maintaining a robust legal position on matters of scope.

European Consistency

Industry expressed many concerns over the approach, penalty and administration of the RoHS Directive across the European Community. The interpretation of the scope of the directive in different member states has developed a situation where a product may be in scope in some parts of Europe and out of scope in other parts of Europe. Recognising this issue and the uncertainty it created for Europe, NWML Chairs an informal forum where member state enforcement bodies could share information and help promote a more even delivery across Europe.

Industry has also expressed concerns over levels of enforcement across the EEA. Through its work with colleagues across Europe and the building of an environment of trust and openness between differing enforcement authorities, NWML and other agencies across Europe have been able to share information relating to specific cases. This has allowed effective cross border cooperation on enforcement activities and the implementation of Europe wide projects.

NWML is on BERR's Market Surveillance Coordination Committee for the implementation of Regulation on Accreditation and Market Surveillance (RAMs). This will include obligations for market surveillance and EU cooperation for RoHS.

Production and Distribution Processes

The EEE production chain is complex and often includes organisations in multiple states outside the EU and organisations not directly engaged with the electronics market where the restricted materials are commonly used. NWML supported the EEE industry by further expanding its areas of engagement. This included intermediaries that are not traditionally engaged with the requirements of electronics regulation and delivery of messages to wider groups through conferencing outside the UK particularly in the Far East.

Testing

There is a lack of standardisation of testing and sample preparation for assessing the concentration of the restricted substance within a homogenous material. Where

producers need to rely on produced test results or certification presented by second parties to ensure compliance this uncertainty in process continues to challenge industry in its ability to confirm the levels of compliance in their products. To aid industry, NWML worked with its European partners to provide some simple guidance in the Enforcement Guide that was published in May 2006. This provided non binding advice on appropriate considerations for the preparation of samples.

The Process of Enforcement

Indirect Enforcement

One policy embraced by NWML at the earliest stage was the belief that most UK industry would aim to operate in a lawful manner and would therefore work towards full compliance. To further this NWML adopted the principle of compliance through education. By devoting resources to communication and education it would be possible to raise the overall compliance levels industry wide.

To this end NWML developed and provides four ongoing knowledge transfer services.

Website

NWML maintains www.rohs.gov.uk. The site provides a central national location for information on RoHS and contains a number of sections:

The website, as an information delivery platform, has been very successful. NWML have received many comments on the site including from the Commission and other member states that have said they often use it as a reference point.

Reported metrics for 2008/09 show:

- Circa 6 000 000 hits in the year
- Primary users UK, USA, China and Japan
- Visitors from 50 different countries identified
- Primary referring sites BERR, Yahoo, Google, Wikipedia

Enquiries

Over the year reported, NWML has received over 1000 enquiries through our online enquiry system, by email, postal service and telephone. NWML manages a database of questions and answers that is made available to other UK government bodies that are also reliant upon the WEEE/RoHS scope. This helps ensure consistency of information to industry.

Press

NWML has maintained a relationship with the press. When requested, NWML has provided representatives for interviews with a number of journals and magazines. It has also used its engagement with the press to deliver important messages where shortcomings in understanding in industry sectors have been discovered.

Knowledge transfer activities

The following table gives an overview of the knowledge transfer activities delivered by NWML over the period.

National seminars and conferences	14	
International seminars and conferences	4	
Individuals at events above	2000	Producers, manufacturers, importers, trade associations, test facilities, distributors
Exhibitions	9	
Web hits	6m	
Recorded enquiries	1000+	Enquiries that are for referral to other sources of information e.g. web site only are not recorded
URCAG *		9 members
EU Network of enforcers		2 meetings per year
Press coverage		Electronics weekly, trade association internal press, Ends Report, Components in Electronics and a variety of local internet articles.

* URCAG is the cooperative group of compliance scheme providers initiated by NWML to deliver consistency within RoHS compliance schemes <http://www.rohsgroup.com/>.

Direct Enforcement

As the market has moved from transitional to a mature enforcement regime there has been a shift of emphasis towards more direct activity.

Process

The majority of enforcement activity is managed as a number of market sector focused projects. These projects begin with a risk evaluation aimed at targeting sectors where there is good supporting information of higher likelihoods of noncompliance. A range of types of information are used in this process. The main criteria used are:

- Impact on environment if non-compliant (product volume and penetration)
- Information through intermediaries

- Levels of control throughout the whole supply chain
- Potential public concern over noncompliance (food and toys)
- Complaints of noncompliance and whistle blowing
- Characteristics of producers in a sector
- Expected product lifetime
- Feedback in the news and from environmental groups
- Results of investigations identifying areas of higher risk

From the identification of a market sector to target a range of organisations are identified and investigated. This includes web searches and Companies House information. The outline delivery of the investigations within a project then follows:

- An initiating letter is sent to the company requesting data on systems and procedures that support compliance.
- A small number of items are purchased from the market, some from those organisations receiving a letter and some from other sources.
- Returns are assessed by an enforcement officer.
- If the information received is insufficient further more product specific information is often requested.
- The same officer then assesses all the information supplied.
- At this stage the risk of non-compliance can be evaluated and often the risk can be reduced and no further action taken.
- In some cases the information is insufficient to reduce the risk and further action might be taken, this may be a full compliance data request or a test purchase and analysis exercise.
- If an offence is detected at this stage an investigating officer will be allocated to progress the case to a conclusion.

In accordance with our policy that enforcement actions will be proportionate we have at our disposal a suite of possible solutions that can be used depending on the circumstances in each case;

Solutions

- No further action (NFA) required, often used where a company has already put right a problem they identified and that has limited impact on the environment and market place.
- Improvement plans, used when a company is working towards full compliance and a more specific time scale is required or voluntary measures to address a noncompliance need to be formalised.
- Compliance notice, this formal legislative solution requires producers to comply with a legal requirement and demonstrate that it has been done.
- Warning notices, such notices could be used where it is suspected that a noncompliance may have occurred and the agency may wish to revisit the product or producer at a later stage to ascertain that corrective action has been taken.

- European Notification, in a case where products are placed on the European market outside the UK it may be appropriate to share information through the European Network of Enforcement Bodies.
- Simple caution, recorded as an offence brought to justice, this process is used when there is sufficient evidence to prosecute a producer and there is a formal admission of the offence. Such cautions are given when it is considered to be in the public interest to do so and where appropriate action has been taken by the producer to prevent reoccurrence of the offence.
- Prosecution, the taking of a case before a court is the ultimate sanction available under the regulations.
- Public disclosure, releasing specific information about a given infringement into the public domain.

The solutions presented are not an exclusive list. The Authority has discretion in use of the various tools including independent use, mixed models and graduated use of sanctions to achieve the desired outcomes.

Making Information Available

In cases that present a complete resolution of the problems encountered it is often not in the public interest to disclose information about the circumstances of the case or the companies involved. This is in line with our policy of proportionate responses to non compliance and ensures that companies are not unduly penalised through adverse publicity, particularly where they have invested significant resources to address the problems that have been brought to their attention. This allows the enforcement authority the flexibility to work in partnership with companies to achieve the highest levels of compliance. However, where a complete resolution can not be achieved and the root causes of the noncompliance are still present in the market place, it may present circumstances where the most appropriate response is to make a wider audience aware of those circumstances with the intention sharing best practice to avoid further similar non compliances.

Risk and Targeting Resources

During the year 2008/09 NWML, in addition to its general provisions, assessed the risk and targeted the following market sectors for investigation projects.

- Leisure computers under category 7
- Golf trolleys and accessories
- Sewing machines both domestic and industrial and other similar tools
- Remote controlled models
- Hair and Beauty equipment
- Torches and other portable lights
- Christmas decorations, other festive equipment and decorative lighting
- Fairground rides, amusement machines and other professional recreational equipment

- Personal Computers
- Non specialist electrical traders and low cost providers
- Cameras and similar micro video using devices

Metrics

The following table gives an overview of the direct enforcement activities and of the actions employed to deliver effective resolution of the investigations.

Resolutions Type	No.	
Investigations	300+	
Resolution after initial engagement (1)	120+	Compliant Business
Resolution requiring direct intervention (2)	170+	Administrative resolution
Improvement plans	14	
Compliance Notices	8	
EU Notifications	3	
Product Withdrawals	4	
Warning letters	8	
Simple cautions		Offences Brought to Justice (OBTJ)
Prosecutions		

Notes

1 This includes those organisations that responded within 28 days to a request for information with a satisfactory response allowing the authority to assess the organisation as being of lower risk.

This also covers those items that were purchased and the screening test results did not identify any significant failures requiring further engagement.

2 This includes those organisations that failed to respond within 28 days and required further intervention to secure sufficient information to assess the organisation of low risk. Not responding within 28 days to a request for information from the Enforcement Authority under Section 8 of the regulations is an offence.

This also includes those items that were purchased and tested where advisory letters were sent to the EEE's producer due to results identifying areas of minor concern.

NWML RoHS Testing Facilities

From the outset it was clear that the agency would require the ability to test EEE as part of a risk analysis exercise as well as being used as a tool in more formal investigations.

NWML has established a facility for the storage, safe mechanical disjoining and screen testing of EEE products. It incorporates the use of two Niton handheld XRF

devices. The first used for broad area screening to ascertain the presence of hazardous substances. The second equipped with a significantly smaller target capability and directional camera is used for more detailed detection of the hazardous substance in the product.

NWML has three approaches to identifying samples for testing:

- Through identification of a potentially non-compliant product. Product may be identified through intelligence or through information provided where the substance of the complaint is traceable and sufficient to warrant a purchase.
- As part of intelligence gathering activities in support of an area targeted through regulation 8 requests. When NWML initiates a batch of requests for compliance under regulation 8 we also purchase some product from the recipient organisations. This allows us to build better intelligence on the market sector under review.
- Where the response received from a regulation 8 request raises concerns over the effectiveness of an organisation's processes or there has been a lack of response from a given organisation. Test purchase is also a suitable approach for confirming levels of compliance or non compliance.
- As part of NWML's building of market intelligence, NWML may sample from across a market sector. This is particularly suitable for building an understanding of levels of compliance where the sector is clearly defined and controlled and there is high market penetration. For example NWML could test a range of mobile phones from a variety of producers. If the results showed high levels of compliance the risks associated with that sector could be reduced. If the levels of compliance were lower, then this would identify a need to increase activity in this market area.

Testing process

The test area is cleaned and prepared to avoid any potential for contamination. All tools used for disassembly have also been tested to ensure there is no contamination.

In the Evidence Store product is removed from packaging and photographed with its packaging. The product and its packaging are then inspected for identification and any other marking suggesting when and by whom it was placed on the market. Section 16 of the WEEE regulations requires the producer to be identified on the product but at time of writing this is not common practice among EU importers.

A test plan is then produced for the exterior of the product. This involves pre-identification of a number of test points on the product prior to disassembly. These points are then tested usually with the large target Niton handheld XRF device.

The product is then disassembled using normal hand tools. A test plan is then produced as described prior to disassembly. The disassembled parts are, where

practical, tested with the small target Niton device used in the desktop screened fixture and the nose camera is used to align the sample.

Use of XRF Technology

XRF can detect the relevant elements contained in the hazardous substances. This means that in the case of those substances where the element is not necessarily the restricted substance further investigation is undertaken.

XRF is indicative of cadmium at the maximum concentration value limits.

XRF is a very useful tool for RoHS Enforcement. Where results suggest non-compliance further analytical testing can be used to confirm the presence of a restricted substance or the producer can be directly engaged to respond to the results of the XRF testing under section 8.

Hexavalent Chromium

XRF is indicative only for the detection of the chromium in a sample but not whether it is hexavalent or in another form. However, hexavalent chromium often has a distinctive patina. During inspection, laboratory staff look for screws and other parts that raise high levels of suspicion of hexavalent chromium. These can be sent for analysis or screen tested with a simple qualitative chemical test.

Test Results

Items tested	86
No of test points analysed	1000+
Results	
Compliant	45%
Uncertain	15%
Questionable	5%
Non compliant	35%

Definitions used in categorising test results

Compliant	Following XRF analysis the indication is one of “not present” or at a value below the maximum concentration values. Where the hazardous substance is detected above these levels but a clear exemption applies to its use.
Uncertain	The test method provides an inconclusive result or where it is only possible for the method to give an indication e.g. chromium without confirming whether it is or is not hexavalent.
Questionable	Following XRF analysis the indication is between the maximum concentration level and twice the maximum concentration level allowing for the uncertainty of the measuring technology. Where the indication is above twice the maximum concentration levels an exemption might apply.
Non-compliant	Following XRF analysis the indication is greater than twice the maximum concentration levels. Where there is deliberate use of the Hazardous Substances. Where the results of accredited external testing demonstrate noncompliance.

The above results show that only 45% of product tested is fully compliant and 35% of the product tested was confirmed non-compliant. However, this is unlikely to be reflective of the market as a whole due to the methods of targeting used. Product sectors are focused on based on risk and only products where there are higher levels of risk or other market intelligence of non-compliance are targeted for testing. As already discussed, the results of market sector engagement and test results are an input into future targeting.

Generally there have been high levels of compliance. Most products have had a few points where the results were uncertain or questionable as defined above. The following is an overview of the results of testing:

- Most machine soldering has been compliant.
- Use of lead and cadmium in plastic as a pigment or stabilizer is still a problem.
- In some cases variable levels of lead contamination have been identified in machine soldered boards. This seems to be normally due to contamination of solder baths. Experience through engagement with producers has proved higher levels are where the baths are not regularly tested at the production facility.
- Most solder failures are on what appears to be hand soldering and areas of rework. Contamination levels at less than 5% are most common. Discrete uses of 60/40 tin/lead solder are not uncommon on otherwise compliant product.
- A small number of products are highly non-compliant. Often where significant amounts of tin/lead solder are found there are also failures in other areas of the product.

- Several failures have been of contract manufactured sub assemblies where otherwise robust compliance systems have failed due to an over reliance on general declarations.
- The power cord flex is also still a source of lead in plastic.
- Lead is also being identified on components. Producers often claim the lead is in glass in electronic parts. However, further tests for silicate may show this to be untrue.
- Hexavalent coatings are being found on bespoke adjustment tools, plated parts and screws.

The Future

It has been the enforcement agency's experience since the implementation of the RoHS regulations that UK producers are putting significant resources into ensuring that products comply with the RoHS directive.

There has been an increase in the levels of compliance in all areas since the legislation came into force and this is reflected in a greater awareness of the principles of the directive in the compliance information we receive.

In line with other EU enforcement agencies we are often contacted by major international companies that notify us of problems with their production processes, in explain great detail what actions they are taking and how the non-compliances are to be resolved. This is a positive step to achieving even higher levels of product conformity.

There are a number of challenges for the future.

To continue to work with UK producers of EEE in developing their compliance systems to ensure products being placed on the market in significant numbers are compliant with the directive.

NWML needs to continue its direct engagement, particularly where higher levels of risk are identified. We continue to identify issues with the import of lower margin items and low volume items.

There is a Review and recast of the RoHS directive. NWML is keeping abreast of the negotiations of the directive and with NWML's practical experience providing support to the policy lead at BERR.

The new European Regulation on Accreditation and Market Surveillance brings additional obligations to the administration of the RoHS directive. These include formal notifications and cooperation across Europe. As the UK enforcement authority and chair of the European RoHS Network, NWML will need to build on its present good relationships across Europe to ensure the provisions of the new regulations can be met.