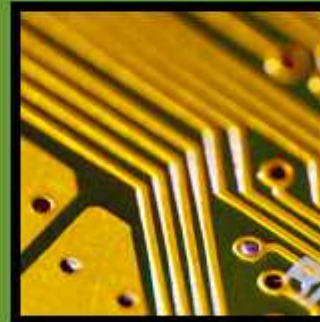




# EU RoHS Enforcement and Compliance Assurance



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## RoHS Enforcement

- Individual EU member states are responsible for enforcing RoHS compliance.
  - Based on national legislation
  - Responsible authority varies by country
    - Dept of Environment in many countries
    - Dept of trade and Industry in UK
    - Customs are involved in some countries
  - State or provincial authority in some countries
- Transposed RoHS regulations
  - Defines penalties
  - General requirements and scope of enforcement
  - Do not define specific requirements for compliance assurance
  - UK and Poland have captured concept of “due diligence” in legislation



## EU RoHS Enforcement Models

- Compliance Enforcement Models
  1. Request for Documentation from Enforcement Authority
    - Market segment
    - Random or based on Competitive Information
  2. Physical Inspection for Restricted Substances
    - Significant purchases of X-Ray Fluoroscopy analyzers
    - Combined with visual inspection for high risk materials
    - Market intelligence
- Penalties
  - Court assigned penalties
    - Fines (up to 2M Euros in some countries)
    - Product shipment stoppage or recall
    - Prison terms



## UK: Various Powers of Enforcement

- Various powers of enforcement will be available, including:
  - Making test purchases.
  - Requesting compliance documentation, inspecting processes and performing analytical tests.
  - Issuing of a compliance notice requiring certain action to be taken.
- “The enforcement authority will carry out market surveillance to detect non-compliant products and may conduct tests for this purpose.”



## UK: Compliance Offences

UK RoHS Legislation Defines Three Requirements that are Offences for Non-compliance

- Prohibition on hazardous substances
  - As per RoHS directive
- Requirements for technical documentation
  - Submit documentation within 28 days of request
- Retention of technical documentation
  - Four years after product placed on market

Note: We recommend retaining compliance documentation for at least ten (10) years



## UK: Compliance Guidelines

- Accept self-declaration as the basis of the compliance regime.
- Producers must demonstrate compliance (on request)
  - satisfactory evidence of such compliance
  - technical documentation or information.
- “Producers may wish to consider the role that both **materials declaration** and component or **material analysis** could play”.



## UK: Defence of Due Diligence

- “due diligence” is a term under Anglo-Saxon common law and focuses on the concept of performance of a proper standard of care in meeting RoHS compliance.
  - “it shall be a defense for that person to show that he took all reasonable steps and exercised all due diligence to avoid committing the offence.” \*\*
  - Must assist in identification of person that committed the act
  - Must show that it is reasonable to have relied on the information

\*\* UK Statutory Instrument 2005 No. 2748

**ENVIRONMENTAL PROTECTION** - The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2005 (laid before parliament Oct 7, 2005)

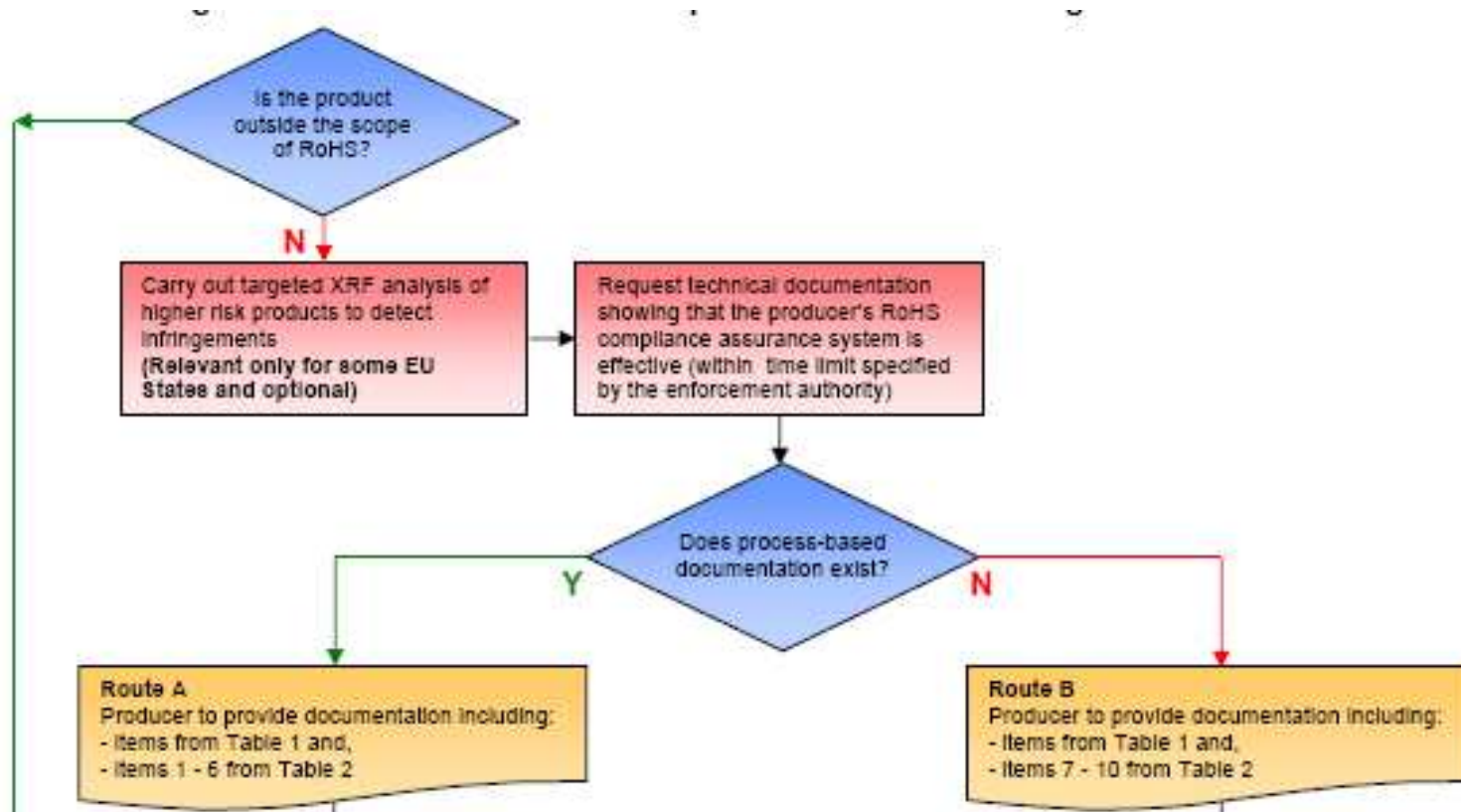


## Enforcement Network

- "EU RoHS Enforcement Authorities Informal Network"
  - Normalize enforcement regimes across member states and eliminate discrepancies.
  - Assists jurisdictional responsibility on RoHS enforcement
- RoHS Enforcement Guidance Document (May 2006)
  - Document has two primary intentions:
    - to assist Member States with national enforcement of the RoHS Directive; and
    - to provide clarity to industry on high-level expectations to demonstrate compliance.



# Flow chart for RoHS Compliance Assessment Using Documentation





## Two Documentation Routes

- Route A: Process based Technical Documentation
  - Compliance Assurance System (CAS)
  - Evidence of Active Control of the CAS
- Route B: Product/Part-based Technical Documentation
  - Producer/Supplier certificates and materials declarations
  - RoHS categorization and exemptions
  - Analysis Reports
  - Documented compliance procedures and evidence that internal procedures are being followed.



## Information Commonly Requested in Enforcement

- Company and Contact Details
- Overview of Organization
- Details of certification or registration schemes
- Overview of EEE product ranges
  - Exclusions and exemptions claimed
- Details of internal control processes to ensure RoHS compliance
- Overview of compliance records
- Statement of Internal Control

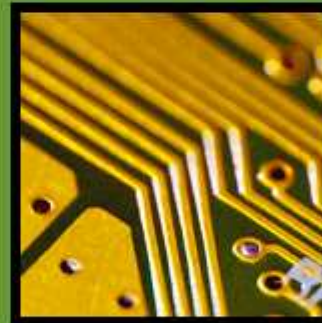


## Compliance and Enforcement Status

- Most in-scope product units shipped into EU at this time are declared as RoHS compliant
  - issues with non-compliant parts that were declared compliant by suppliers
- Customers and distributors have been the most significant enforcers of EU RoHS to this point in time
- Only a few EU countries have started aggressively enforcing RoHS.
  - Inventory of products put on the market before July 1, 2006
  - Build enforcement authorities, procedures, and equipment
  - Providing time for industry to adapt



# Internalizing a Compliance Assurance System



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## What is Industry Doing?

- Many large EEE producers are using a multi-faceted approach to compliance
  - Materials declaration and CoCs (baseline)
    - Variation among companies in substances requested
    - JIG level A and B are baseline
  - Chemical analysis reports from suppliers
    - Emphasis on specific commodities/materials
  - MSDS reporting for specific commodities/raw materials
  - Incoming inspection with XRF (spot checking)
  - Environmental compliance audit of key suppliers
  - Random inspection of finished products (XRF and chemical analysis)



## What is Industry Doing?

- Medium sized EEE producers are using a more focused approach
  - Focused on materials declaration and CoCs
  - Assessment of key suppliers
  - Some internal XRF/chemical analysis
  - Incoming inspection performed by Contract Manufacturers
  - Limited inspection of finished products
- Small EEE producers
  - Generally started with collecting datasheets indicating RoHS compliance
  - Many now (2006H1) supplementing data with materials declaration and CoCs
  - Data management is a key issue – generally limited PLM/EDM capability



## Management System

- Compliance processes and procedures are generally integrated into existing Quality Management System (QMS) or Environmental Management System (EMS)
- Several frameworks exist or are in development for Hazardous Substance Free (HSF) Management.
- Companies that do not have a formalized QMS or EMS, should capture standalone RoHS compliance procedures and data records that demonstrate compliance.



## Environmental data required for:

- Compliance Assessment / Product Conversion
- New Product Design -- component selection
- Internal controls and management of business risk
  - (management/mitigation of accidental non-compliance)
- Customer Request / Audit
- Enforcement Request / Audit
- Treatment instructions (WEEE)
- Other Environmentally Conscious Design Purpose



## Assessing and Proving Compliance

### Some Key Questions:

- Does part/material meet hazardous substance free specification?
  - Electrical parts
  - Mechanical parts
- Is a material declaration available?
  - What is the risk of forgery?
- What is the risk on non-compliance by a supplier?
  - Has supplier been qualified?
- Is there a risk of restricted substance being present in a specific part/material?
- Has materials analysis being performed?
  - Has analysis been carried out recently?
  - What test methods were used?
- Should periodic spot testing be performed?

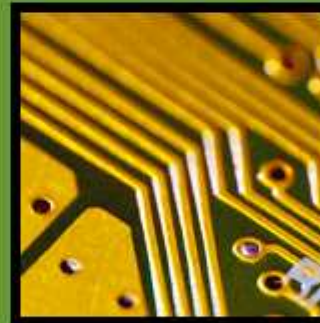


## Changes to Data Management Systems

- Impact on
  - Component Database for Design
  - EDM System
  - PDM System
  - ERP/MRP Systems
  - Can add > 100 data fields per manufacturer's part number
- New Information
  - RoHS Compliance
  - Exemptions
  - Materials Declaration
  - Manufacturing Compatibility
  - Hazardous content
  - Sales



# The Role of Standards in Compliance Assurance and Enforcement



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## Limited Existing Standards for Restricted Substance Compliance

- JIG101 - Joint Industry Guide
- IPC 1751/1752 – Materials Declaration Standard
- JGPSSI – Japan Green Procurement Standardization Survey Initiative
- IECQ QC080000 – Hazardous Substance Process Management (based on EIA/ECCB 954)



## Joint Industry Guide (JIG)

- Broadly used as a reference list of substances for materials declaration
- Level A materials
  - Based on currently enacted legislation...
    - Use and/or marketing is prohibited
    - Use and/or marketing is restricted
    - Requires reporting or results in other regulatory effects
- Level B materials
  - Materials and substances that industry has determined relevant for disclosure
    - Substances of environmental, health, or safety interest
    - Substances that would trigger hazardous waste management requirements
    - Substances that could have a negative impact on end-of-life management



## International Standards

- IEC/TC111 in 2004 to create international standards supporting environmental compliance of electronics.
- TC111 has a comprehensive Work Program
  - IEC 62474: Materials Declaration (WG1)
  - IEC 62430: Environmentally Conscious Design (WG2)
  - IEC 62321: Test Methods of Six Regulated Substances (WG3)
  - IEC TS62476: Guidance for assessing compliance of finished goods with respect to restriction of use of hazardous substances (PT62476)
  - IEC PAS: Sample Disjointment (HWG3)



## Test Methods of hazardous substances (IEC62321)

- Title: Procedures for the Determination of Levels of Six Regulated Substances (Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls, Polybrominated Biphenyl Ether) in Electrotechnical Products
- Broad international participation: Europe, North America, China, ...
- Manufacturers and EU enforcement authorities waiting for this standard to validate test procedures
- Current draft has been three years in development.
- Schedule:
  - Initial Draft for Vote failed – Oct 06
  - Updated Draft expected June 2007



## Overview of Test Procedures\*

Steps	Substances	Polymers	Metals	Electronics (PWBs/Components)
Mechanical sample preparation (Clause 5)		Direct measurement Grinding	Direct measurement Grinding	Grinding
Chemical sample preparation		Microwave digestion Acid digestion Dry Ashing Solvent extraction	Microwave digestion Acid digestion	Microwave digestion Acid digestion Solvent extraction
Analytical technique definition (incl. typical margins of errors)	PBB/PBDE	GC-MS (Clause 7)	NA	GC-MS (Clause 7)
	Cr VI	Alkaline Digestion/ Colorimetric Method (Clause 9)	Spot-test procedure/ boiling-water-extraction procedure (Clause 8)	Alkaline Digestion/ Colorimetric Method (Clause 9)
	Hg	CV-AAS, AFS, ICP-OES, ICP-MS, (Clause 10)		
	Pb/Cd	ICP-OES, ICP-MS, AAS (Clause 11)	ICP-OES, ICP-MS, AAS (Clause 12)	ICP-OES, ICP-MS, AAS (Clause 13)

\* Draft: Standard has not been approved and may still change