IECQ HSPM SCHEME & QC 080000: CURRENT STATUS

Chris Yau
WG 5 Convener
CABC Vice-Chairman
WHO IS IEC?

- IEC is the *International Electrotechnical Commission*

- Founded in 1906 to promote international co-operation on all questions of *standardization* and related matters in the fields of electro-technology, including *conformity assessment*.

- IEC provides a platform to companies, industries and governments for meeting, discussing and developing the International Standards they require. The world’s leading organization for the preparation and publication of international standards for electro-technology.
STRUCTURE OF THE IEC

IEC Council

Council Board (CB)

Executive Committee (ExCo)

Central Office

Management Advisory Committees

Standardization Management Board (SMB)

Conformity Assessment Board (CAB)

Market Strategy Board (MSB)

Special Working Groups

Technical Committees (TC)

Systems
- IECQ
- IECCEE
- IECEx
- IECRE

Strategic Groups

Management Advisory Committees

Technical Advisory Committees

Technical Committees (TC)

Special Groups

Market Strategy Board (MSB)

Special Working Groups

SC PT MT WG
CONFORMITY ASSESSMENT

CAB - Conformity Assessment Board

IECEE
System for Conformity Testing and Certification of Electrotechnical Equipment and Components

IECEX
System for Certification to Standards Relating to Equipment for use in Explosive Atmospheres

IECQ
Quality Assessment System for Electronic Components

IECRE
IEC General System for Certification to Standards relating to plant, equipment and services associated with Renewable Energy Systems

IEC Wind Systems WT-CAC

IEC Solar Energy Scheme

IEC Marine Energy Scheme
WHAT IS IECQ?

- IECQ (IEC Quality Assessment System for Electronic Components) is a worldwide approval and certification system covering the supply of electronic components and associated materials and assemblies (including modules) and processes.

- It uses quality assessment specifications that are based on International Standards prepared by the International Electrotechnical Commission (IEC) or National Standards where an IEC Standard does not exist.
IECQ SCHEMES

IECQ System
www.iecq.org

Approved Process Scheme (IECQ AP)
E.g. ESD etc.

Counterfeit Avoidance Programme (IECQ CAP)

Approved Component Scheme (IECQ AC)
(Production of Components + Assemblies)

Automotive Qualification Programme (IECQ AQP)

IECQ HSPM Scheme “IECQ QC 080000”
Hazardous Substance Process Management

IECQ Avionics Scheme (IECQ ECMP)
Electronic Component Management Plan

IECQ Independent Testing Laboratory Scheme
(IECQ ITL)
IECQ QC 080000:2012

- Provides the management system framework
- Covers manufacturers, assemblers and suppliers of electronic components and related assemblies (including modules), and associated materials and processes.
- Ensures that hazardous substances are managed and controlled by the organization according to declared regulations + standards.
IECQ QC 080000 AND QMS

- IECQ QC 080000 adds to ISO 9001 or other equivalent quality management system standards
- IECQ QC 080000 includes the requirements for managing hazardous substances on top of the quality management system
- ISO 9001 or the equivalent QMS standard MUST be read in conjunction with IECQ QC 080000
SAME RULES FOR EVERY CB

- Rules published in IECQ 03-5, which includes standard assessor days for all IECQ CBs

- IECQ CB assessment team have competency on the IECQ QC 080000 specification, the core processes of the organization being assessed, and the knowledge of the associated hazardous substances
SAME RULES FOR EVERY CB

- All manufacturing locations are assessed, no sampling

- Deficiencies are not to be recorded or reported as Observations or Opportunities for Improvement
  - Either complied or not complied
Replaces multiple 2nd Party assessments by buyers with one “IECQ Assessment”.

Benefits to Industry
• Cost savings
• Savings in resources
• Consistency in supplier assessment
• Confidence in supply chain
• Online certificates
IECQ HSPM COMPETITIVENESS

- One single set of Rules and Operational Procedures for all IECQ approved Certification Bodies (CBs) to follow
- All IECQ CBs undergo the single assessment process
- Single certificate format used by all IECQ CBs worldwide
- All certificates issued via the IECQ online system and located in the one place with public access and search
  - If the certificate is not showing on the IECQ website – it does not exist!!
ONLINE CERTIFICATES

IECQ Online Certificates

- All certificates located
- Public access
- Search features
- Online version is the master
16 CBs participated
CERTIFICATES GROWTH CONTINUES!
NUMBER OF CERTIFICATES - ASIA

China 2059
Taiwan 535
Hong Kong 16
S Korea 16
Malaysia 7
Thailand 5
Vietnam 4
Japan 3
Singapore 3
Philippines 2

as of 22 Feb 2015
NUMBER OF CERTIFICATES – NAM

as of 22 Feb 2015

Mexico 3
US 2
Canada 1
NUMBER OF CERTIFICATES – SAM

Brazil 8
Argentina 2

as of 22 Feb 2015
NUMBER OF CERTIFICATES – EU

Czech Rep 2
Slovakia 1
Netherland 1

as of 22 Feb 2015
NUMBER OF CERTIFICATES

- 77% are in China
- 98% are in the Greater China region
- Many certified sites in China, especially those in the Pearl River Delta region, are subsidiaries of HK companies
22 July 2014
Exemption lifted:
Medical devices
Monitoring and control instruments

22 July 2016
Exemption lifted:
In-vitro diagnostic medical devices

22 July 2017
Exemption lifted:
Industrial monitoring and control instruments

22 July 2019
All E&E equipment covered except those explicitly exempted
To accommodate other hazardous substances directives and regulations other than RoHS, e.g.
  - Compliance assessment, preparation of technical file, preparation of self-declaration, use of markings, change control, product recall in re-casted RoHS
  - The information communication within the supply chain in REACH

Better alignment and consistency with ISO 9001:2008

Remove the ambiguity and clarify the intention of some requirements in IECQ QC 080000:2005
Revising IECQ QC 080000 to align with ISO 9001:2015
- Investigating the feasibility of adopting the new ISO Annex SL format

To review and strengthen the training and auditor qualifications of the IECQ HSPM schemes
OTHER SCHEMES OF INTEREST TO HK INDUSTRY

IECQ System
www.iecq.org

- Approved Process Scheme (IECQ AP)
  E.g. ESD etc.

- Counterfeit Avoidance Programme (IECQ CAP)

- Approved Component Scheme (IECQ AC)
  (Production of Components + Assemblies)

- Automotive Qualification Programme (IECQ AQP)

- IECQ HSPM Scheme “IECQ QC 080000”
  Hazardous Substance Process Management

- IECQ Avionics Scheme (IECQ ECMP)
  Electronic Component Management Plan

- IECQ Independent Testing Laboratory Scheme (IECQ ITL)
IECQ – FUTURE DEVELOPMENT

- Development and growth of the CAP and AQP Programmes
- Development of IECQ CAP Specification for other industries other than ADHP (aerospace, defense, high-performance) industries.
- LED in lighting certification initiative (to be launched in Q3 2015)
- Consideration of supply chains beyond electronics
IECQ – FUTURE DEVELOPMENT

- Membership growth
- Co-ordinated PR with IECEX, IECEE and future IEC Systems, in particular joint global seminars
THANK YOU
How to Manage Hazardous Substance Effectively in Electronics Industry

Stanedy Yue 余锦輝
Senior Manager, Sustainability and Planning
高級經理，可持續發展和規劃

Mar 20, 2015
Content 内容

1. Company Introduction 公司簡介
2. Circular Economy 循環經濟
3. Green Innovation 綠色創新 – Green Products 綠色產品
4. Management of Hazardous Substances 有害物質管理
5. References 參考
WOOX Innovations joins Gibson Brands
WOOX Innovations: a start-up with a 122-year heritage

Audio
Home Cinema and Video
Headphones
Smart Home
Home Comms
Accessories

A Gibson Brands company
Founded in 2013
Global footprint and leadership

Gibson Brands
於2013成立
環球足跡與領導力
At WOOX Innovations we are dedicated to **delivering meaningful innovation in sound and connected entertainment.**

致力於在聲音和互聯娛樂方面發展有意義的創新。

From great sound quality, to advanced connectivity and sophisticated design, we strive to improve the entertainment experience.

從傑出的聲音質量，到高級連通性和精密的設計，我們力求改善娛樂體驗。
Approach 途徑

- Green Innovation 綠色創新
- Green Operations and Supplier Sustainability 綠色運營與供應商可持續發展
- Circular Economy 循環經濟
- Sustainable World 可持續發展的世界
- Environmental Footprint 對環境的影響
- Meaningful Innovation 有意義的創新
- Well-being & Society 福祉與社會
the circular economy

循環經濟

extracting raw materials

parts supply

manufacturing

distribution

user

incineration & landfill

service

refurbish

parts harvesting

recycle
Circular Economy 循環經濟

Circular economy

Linear economy

Resource availability

Growing demand

Access over ownership

Waste as a resource

Economy based on renewable energy

Growing population

5 planets needed

9 Billion in 2050

For rent

8 Billion

9 Billion

2030
Green Innovation 綠色創新
– Green Products 綠色產品

asimplyswitch.com
Green Innovation 綠色創新
– Green Products 綠色產品

**Products and packaging 產品和包裝**

- will not let any energy and materials go to waste
  將不會浪費任何的能源和材料

- will be fully fit for continuous recovery and reutilization
  將完全符合持續回收和重複利用

- will be free of any substances that will harm people and the environment
  將無任何對人類和環境有害的物質

- our products will exceed the lifetime expectations of our customers
  我們產品的生命週期將超過客戶期望

- our products do not harm the global society in any way
  我們的產品不以任何方式損害全球社會
Green Innovation 綠色創新
– Green Products 綠色產品

- No use of PVC and EPS 不使用PVC和EPS
- Recycled content in packaging 包裝再生含量
- Energy consumption 能源消耗
- Packaging 包裝
- Substances 物質
- Weight 重量
- Recycling and disposal 回收及棄置
- Lifetime reliability 使用壽命

Optimization of Volume ratio packaging/product 體積比包裝/產品的優化

PVC/ BFR free 不含PVC/BFR
Green Innovation 綠色創新
– Green Products 綠色產品

Green Track towards desired end-points 綠色跡跡走向所需的終點

Inputs for the Green Tracks 綠色跡跡的輸入：
• Future legislation 將來的法規
• External labels 外部標籤
• Customer questionnaires 客戶調查問卷
• Stakeholders expectations (e.g. from NGOs) 持份者的期望 (如, 非政府組織)
• Performance of competitors 競爭者的表現
• Availability of technologies and effect on cost 實用性技術和對成本的影響
Green Innovation 綠色創新
– Green Products 綠色產品 2014

AE1500
BT2000
AECS7000

SHP9500
BDP7750

SFL7000
M110
Management of Hazardous Substances
有害物質管理
We need to consider ......

我們需要考慮 ......
What industry is doing?

業界在幹什麼？

• Hazardous substances under spotlight
  焦點的有害物質
  • PVC 聚氯乙烯

• Brominated flame retardants 溴化阻燃劑 (BFRs)

• Antimony trioxide 三氧化二锑

• Beryllium & Beryllium compounds 鈹及鈹化合物

Source: Greener Gadgets: Designing the future
What industry is doing?
業界在幹什麼?

- In 2010, the Industry Association INEMI published a timeline showing that halogen-free components for PCs would be widely available in the supply chain by the end of 2011.

2010年，行業協會INEMI 公佈的時間表顯示，到2011年年底無鹵素成分的個人電腦將廣泛使用

- Companies are actively lobbying for EU regulation to restrict the use of all PVC and BFRs.

積極遊說歐盟法規，限制所有PVC和溴化阻燃劑的使用

- Publishes extensive Restricted Substances List for electronics manufacturing, aims not only restricting hazardous substances in products, but also in manufacturing.

發布全面的電子製造過程的限用物質清單，目的不僅僅是限制在產品中的有害物質，而且是在製造過程的要求

Source: Greener Gadgets: Designing the future
Regulated Substances List (RSL)

限制物質清單


- WOOX Innovations complies with all relevant legislative environmental requirements including the restriction of use of hazardous substances
- WOOX Innovations 符合所有相关环境法规要求，包括限制有害物质的使用

- The list contains minimum requirements related to:
  列表包含與最低要求:
  - Federal, state, county or municipal law, regulation, ordinance or code,
    聯邦，州，國家或市政法律，法規，條例或準則
  - WOOX INNOVATIONS’ own requirements
    WOOX INNOVATIONS 自身的要求

- Updated regularly to reflect the regulatory changes
  定期更新，以反映法規的變化
  - e.g. RoHS, REACH POPs, CPSIA, California Prop. 65, batteries, packaging, CARB, etc.
Regulated Substances List (RSL)

<table>
<thead>
<tr>
<th>Substances</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>Maximum concentration Limit (ppm (mg/kg) or as given in the Table)</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td></td>
<td>--</td>
<td>Applied in composite wood products or components (plywood, particle board and MDF) and textiles.</td>
</tr>
<tr>
<td></td>
<td>200-001-8</td>
<td></td>
<td>--</td>
<td>No intentionally added content.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.05 - 0.13</td>
<td>Applied in emissions from hardwood plywood, other wood-based materials and non-wood materials (see remark 6).</td>
</tr>
<tr>
<td>Lead and lead compounds</td>
<td>--</td>
<td>--</td>
<td>90</td>
<td>Applied for children 12 years of age or younger.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td>Applied in substrate of product for children 12 years of age or younger.</td>
</tr>
</tbody>
</table>

1. Regulated substances
2. CAS No. & EC No
3. Measurement methods
4. Maximum concentration value
5. Application
BOMCheck Declarations 申報

• BOMcheck, an online system for electronics industry that allows suppliers to share their REACH/ROHS and other substance requirement data with multiple manufacturers. BOMcheck 是一個在電子產業中，能讓眾多生產商共享REACH/ROHS及其他關於物質要求的數據。

• ECHA updates this list at least twice a year, we refer to the http://echa.europa.eu/web/guest/candidate-list-table for the most recent list of candidate substances. 歐洲化學品管理局每年至少更新這個清單兩次，我們需要參照 http://echa.europa.eu/web/guest/candidate-list-table 獲取最新的候選物質清單

• BOMcheck will also contain the most recent list of SVHC and separates between those SVHC which are likely to be found in electronics and those that are not. 由于BOMcheck 也將包含SVHC 的最新清單，並區分哪些SVHC 可能會在電子產品中使用，哪些不會
Compliance check 合規性檢查

1. RoHS Summary RoHS 匯總

2. Product Risk Assessment + Due-Diligence Test 產品風險評估 + 盡職調查測試

Summary in Hazardous substances management 有害物質管理的關鍵

• Hazardous substances management is one of the subjects of company’s risk Management 有害物質管理是公司風險管理項目之一
• Key messages 關鍵信息:
  • There is no risk free in hazardous substances management 沒有無風險的有害物質管理
  • Risk minimization and managing risk 風險最小化和管理風險
  • It is a matter of risk management by installing 它是風險管理通過執行
    1. Stakeholders concerns/expectations management 利益相關者關注/預期管理
    2. Sound Management system (e.g. ISO 9001, ISO 14001, IECQ080000) 完善的管理體系 (如ISO9001，ISO14001，IECQ080000)
    3. Due diligence actions 盡職調查行動
    4. Cost and effect analysis 成本及效果分析
## Risk Evaluation – Materials vs Chemicals

<table>
<thead>
<tr>
<th>High risk material</th>
<th>RoHS</th>
<th>CA Prop 65 (Lead content)</th>
<th>Phthalates</th>
<th>SCCP</th>
<th>PAH</th>
<th>Organotin</th>
<th>Azo dye</th>
<th>Flame retardant (TEPA, TRIS)</th>
<th>Flame retardant (TDCPP, TCEP, TDBPP)</th>
<th>Heavy metals in Packaging</th>
<th>Battery Directive - Mercury content</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC</td>
<td>√</td>
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<tr>
<td>Plastic (other than PVC)</td>
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<td>Rubber</td>
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<td>Fabric</td>
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<tr>
<td>Synthetic leather</td>
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<td>√</td>
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<td>Foam</td>
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<td>Glue/adhesive</td>
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<tr>
<td>Solder</td>
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<td>Battery</td>
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</table>
Substituting SVHCs

1. Evaluate the hazard and classification of the potential alternatives (check the classification, understand the substance that you are dealing with)
2. Understand if the product or process has been developed (technology and/or economically feasible)
3. Review the whole formulation
4. Get in touch with suppliers of their SVHC and ask if there any non-SVHC alternative
5. Use the correct formal chemical name or CAS/EINECS number when carrying out communication/study
6. You are the expert on your product. Don’t necessarily believe everything that a consultant or some other company may tell you.
7. Example, moving from DEHP to one of the higher chain length phthalate esters, where the properties are very similar

Source: ECHA Newsletter (Feb 2015), Substituting SVHCs – how to do it successfully
替代 SVHC

1. 評估危害和潛在替代物的分類 (檢查分類，理解你所處理的物質)
2. 理解產品或方法是否已研發 (技術和或經濟可行性)
3. 複審整個配方
4. 聯繫供應商，詢問他們是否有非 SVHC 的替代物
5. 當進行交流/學習時，使用正確的正式的化學名稱或 CAS/ EINECS 號碼
6. 你是製造產品的專家。不必完全相信顧問或者其他人的意見
7. 舉例，從 DEHP 轉移到其他更長鍵的鄰苯二甲酸酯，其特性是非常相似的

Source: ECHA Newsletter (Feb 2015), Substituting SVHCs – how to do it successfully
References 参考


2. Greenpeace, “Green Gadgets: Designing the Future”

"Sustainability is all about our future generations, Pls act now
可持续發展是所有關於我們的子孫後代，請現在就採取行動 !!"
Thank you!
Chemical Management System

**Speaker:**
Dr. Rodney Thu  
Chemical Technical Manager, Hasbro Far East Ltd.
Why do we need to know?

Pre-2007
Requirements: Lead & 7 other heavy metals, 6 Phthalates, EU RoHS

2007 & 2008
A year of recalls

(Post-2008
(It’s a different world out there!)
Regulatory actions
US – CPSIA, State Laws
EU – Toy Safety Directive (TSD), REACH
Bans on Phthalates (DEHP, DBP, BBP, DINP, DIDP etc.)
Mandatory testing & certification)
**Why do we need to know?**

**June 2007:** The *Thomas and Friends Wooden Railway* toys were recalled due to risks of **Lead Poisoning** from the **Paint**.

**November 2007:** A popular children's toy, *Bindeez* (also known as Aqua Dots, in the United States), was recalled when it was discovered that **1,4-butanediol** had been substituted for **1,5-pentanediol** in the bead manufacturing process. The human body metabolises the substance to form the **anesthetic GHB**.

**November 2007:** About 175,000 *Curious George* 12-inch plush dolls with plastic faces were recalled due to the risk of **Lead exposure and poisoning**.

**June 2010:** *McDonald's* recalled the *Shrek Forever After* cups due to risks of **Cadmium poisoning** from the cups' paint.

**September 2010:** *Fisher Price* recalls 10-million products, including enough toys to merit this as the largest toy recall in history

Many more...
# Why So Many Chemical Regulations?
## Market Drivers

<table>
<thead>
<tr>
<th>Regulators (Federal, State and Global)</th>
<th>Media/NGO Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Evolving chemical requirements with more focus on formulations/substances.</td>
<td></td>
</tr>
<tr>
<td>• State Level activity increasing.</td>
<td></td>
</tr>
<tr>
<td>• Global requirements increasing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Retailer Requirements</th>
<th>Consumer Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market requirements</td>
<td></td>
</tr>
<tr>
<td>• Brand requirements</td>
<td></td>
</tr>
<tr>
<td>• Entering new emerging markets (i.e. growth potential)</td>
<td></td>
</tr>
<tr>
<td>• Demanding more “green” products</td>
<td></td>
</tr>
<tr>
<td>• Environmentally conscientious</td>
<td></td>
</tr>
</tbody>
</table>
Chemical Data Management/Solutions
Lists, Lists and More Lists

- WA & VT CHCC
- Minnesota CoHC
- California Green Chemistry
- Maine CHC
- NTP Carcinogens
- CPSC CPSIA
- EU RoHS
- EU TSD
- Canada CMP
- REACH SVHC
- CA Prop 65
- Japan PAC
Worldwide Regulations

Hazardous substances
- CMR
- Endocrine disruptor
- Skin/eye irritation
- Allergenic
- Toxic to environment

A LOT MORE LISTS DEVELOPED / COMING UP!!
How Has Hasbro Reacted?

Hasbro Policy
SRP-017: bans/restrictions on many chemicals
SRP-025: supplier certification in addition to SRP-017
QA049: Hazardous chemicals control system

IT Tools
Implement CMD and SciVera for chemical management

BOM/BOS Requirement
Require BOM/BOS of products from 2012 (SRP-023)
Conformity assessment procedures

• Module A: Internal production control
  • Factory Audits and Vendor Quality systems
  • Safety assessment (encompassed within extensive Hasbro procedures)
  • Chemical safety assessment
  • QN process

• Voluntary standards
  • Compliance with voluntary standards encompassed within extensive Hasbro procedures

Third party testing to Harmonised standards may be used as a verification method.
Simplified flowchart on QA049 – HCC requirements

- Procurement control
  - Communication on Hasbro spec.
  - Supply chain management

- Batch information

- Incoming material control
  - Bill of Substances (BoS) – CMD
  - Test reports
  - Designated storage area
  - Labeling on each container
  - FIFO

- Process control
  - Control auxiliary tools
  - Cleaning records
  - Designated production line

- Finished product
  - VSP, EP
  - FEP
  - QN, renewal...etc

- Traceability system
  - Internal training
  - Internal audits

- SKU / datecode

- Traceability records
  - Production summary
Key development stages

- Test requirements and frequencies according to QA049
- Mainly on accessible materials (pigments, resins, paints... etc), different types have different test requirements and frequencies
- Only materials that comply to the requirements could be released to production

- Small batch of production samples
- Must be tested against and comply with test plan
- Engineering give production “sign off” (Engineering Note or EN)

- First production batch
- Must be tested against and comply with test plan
- Complete data set including inspection
- Only then can stock be released or allowed to ship
- Declaration of Conformity
- Tech files are compiled and stored
Post development controls

• Inspection controls
  • Each batch of production

• Vendors perform testing
  • Qualified vendors perform internal testing in their own facilities

• Supply chain management
  • Audit of suppliers
  • BoM / BoS
  • Vendor substance management (CMD)
  • Random testing
  • Commodity supplier approval

• QN process restarts in case of significant change or period without production (6 months).
Test specifications

• Test plan
  • Based around Hasbro's Safety and Reliability Specifications (SRS)
  • Key document in product approval and safety assessment
  • Includes:
    • Functional performance criteria
    • Life specifications
    • Reliability specifications
    • Torque/Tension specifications
    • Other “specialist requirements” (Electrical, Sound levels)
  • Revised at key stages of product development
Safety and Reliability Specifications (SRS)

• Around 120 individual specifications

  • Covers hazards from small parts, hemispheric shapes, heavy metals, nitrosamines in rubber...
  • Reliability measures include transportation tests and accelerated use tests
  • Combination of ASTM F963, ISO8124 and EN71
  • Includes requirements learned from product experience
  • Most stringent approach including margin of error where appropriate
Other procedures

• **Product Development Requirements (PDR)**
  • Around 50 individual procedures including Small part prevention, battery qualification, age grading....

• **Safety and Reliability Procedures (SRP)**
  • Around 20 individual procedures including Recall, consumer complaints, social compliance...

• **Factories have QM systems**
  • Must pass Hasbro Quality audit (based on ISO9001)
Hasbro Test capability

• Hasbro internal test lab, She Kou
  • 30 staff/785Sq.m
  • Qualified chemists
  • Heavy element testing
  • Phthalate content testing
  • Full physical lab incl. flammability
  • Microwave digestion
  • ICP-OES
  • LC-ICP Mass spectroscopy
  • GC Mass spectroscopy
  • UV-vis
  • XRF scanning

• Operation to ISO17025
Bill of Substance (BoS)

**Incoming Materials**

- Obtain complete BoS for accessible materials in toys
- BoS is not required for:
  - Non-retainable packaging materials
  - Inaccessible materials

**Example of BoS**

<table>
<thead>
<tr>
<th>Trade name</th>
<th>Supplier</th>
<th>CAS no.</th>
<th>Chemical name</th>
<th>% Conc.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent A</td>
<td>AAA</td>
<td>78-93-3</td>
<td>Butan-2-one</td>
<td>40 – 60</td>
<td>Solvent</td>
</tr>
<tr>
<td>Super Black</td>
<td>BBB</td>
<td>1333-86-4</td>
<td>Carbon Black</td>
<td>1 – 2</td>
<td>Pigment</td>
</tr>
<tr>
<td>PolyX</td>
<td>CCC</td>
<td>25034-86-0</td>
<td>2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene</td>
<td>20 – 30</td>
<td>Resin in paint</td>
</tr>
<tr>
<td>BYXX</td>
<td>DDD</td>
<td>64742-48-9</td>
<td>Naphtha (petroleum), hydrotreated heavy</td>
<td>10 – 20</td>
<td>Flowing agent</td>
</tr>
</tbody>
</table>

- Maybe disclosed in the form of SDS, MBOS, declarations... etc.
- All BoS information should be compiled into BoM (Bill of Materials and input into CMD)

Two options of CMD:
- Full installation in factory’s server (more expensive, suggested for factories with larger no. of SKUs)
- One time BoSConnect input service (much less expensive, web-based, suggested for factories with small no. of SKUs)

Hasbro CMD to SciVera LENS for Chemical Safety Assessment (CSA)
Why The BoS Way?

- Testing not viable
  - Millions of $$$$. Test methods not even available/possible.

- Questionnaires and declarations
  - Need verification & frequent updates.

- Fast changing regulatory environment
  - Need to re-assess entire supply chain with upcoming requirements.
  - Need for data to prepare periodic regulatory reports.
What’s a Bill of Substance (BoS)?

Detailed description of a material including:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Chemical Abstract Number (CAS No.)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.I. Pigment Yellow 174</td>
<td>78952-72-4</td>
<td>5-10</td>
</tr>
<tr>
<td>C.I. Pigment Yellow 12</td>
<td>6358-85-6</td>
<td>5-10</td>
</tr>
<tr>
<td>Rosin, polymer with p-tert-butylphenol, formaldehyde and pentaerythritol</td>
<td>68213-62-7</td>
<td>20-30</td>
</tr>
<tr>
<td>Distillates (petroleum), hydrotreated heavy paraffinic</td>
<td>64742-54-7</td>
<td>25-35</td>
</tr>
<tr>
<td>Linseed oil</td>
<td>8001-26-1</td>
<td>15-25</td>
</tr>
<tr>
<td>Poly(ethene)</td>
<td>9002-88-4</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Octanoic acid, cobalt salt</td>
<td>6700-85-2</td>
<td>&lt; 1</td>
</tr>
</tbody>
</table>

Example: TK Leoman Printing Ink - BoS
BoS v.s. Material Safety Data Sheet/Safety Data Sheet (MSDS/SDS)?

• MSDS/SDS usually only include information on the potential hazards (health, fire, reactivity and environmental) and how to store & work safely with the chemical substance.

• Example – TK Leoman Printing Ink - MSDS

![Hazardous Ingredients Table]

Does not usually contain all the information necessary to identify & evaluate chemical composition!
Validating CAS Number

A CAS Registry Number® includes up to 10 digits which are separated into 3 groups by hyphens. The first part of the number, starting from the left, has 2 to 7 digits; the second part has 2 digits. The final part consists of a single check digit.

```
XXX-XX-X
```

First part: 2 to 7 digits

Second part: 2 digits, substance types

Check digit

http://www.cas.org/content/chemical-substances/checkdigit

**EXAMPLE**

CAS No. 7440-19-3

\[6 \times 7 + 5 \times 4 + 4 \times 4 + 3 \times 0 + 2 \times 1 + 1 \times 9 = 89\]

Check digit: \[89 \div 10 = 80 + 9 \div 10\], check digit = 9

CAS No. 7440-19-3 is invalid as its check-digit “3” is incorrect.
Validating CAS Number

In addition to organic and inorganic substances, REGISTRY has:

65,812,577 sequences

CAS RN 1632279-96-9 is the most recent CAS Registry Number

Specialized Substance Collections Count

CASREACT⁽¹⁾ 75,709,800 Single and multi-step reactions, and synthetic preparations

CHEMLIST 312,229 Inventoried/regulated substances

CHEMCATS 74,326,293 Commercially available chemicals

MARPAT 1,057,421 Searchable Markush structures
Chemical Information Management

- Developed by Hong Kong Toys Council, software company and Toy Brands
  - Minimizes redundancy of multiple data entry at various location, real time status checking, data mining, compliance validation, auto filing capability, email alert engine
  - Allows us to automatically transfer data to retail partners.

Hasbro CMD Workflow
Timeline on Hasbro CMD Implementation

2011 June
Discussion on CMD

2011 Nov
SciVera pilot start
CMD – SciVera conversion

2012 Nov 13
Hasbro 1st CMD vendor training

2012 Dec 7
Hasbro CMD start implementation

2013 Jan 22
Hasbro 2nd CMD vendor training
QA048 published

2013 Mar
Hasbro BoM leveling requirement issued

2013 Apr 9
SRP023 published

2013 Mar
Hasbro CMD/SciVera auto upload
Data mining enhancement (brand version)

Collection of data on existing active items

2014 Feb 12
Hasbro 3rd CMD vendor training
Material Type requirement issued

(Phase 1 ends)
In Summary

• Most stringent approach in the world
• Designed and manufactured to requirements in advance of current safety standards
• Audited, verified and inspected
• Becoming more stringent and transparent
Thank You!

? Questions ?
A Support Programme for Assisting Hong Kong SMEs To Effectively Achieve Hazardous Substances Compliance through Adoption of IECQ QC 080000 Hazardous Substances Process Management System

Funded by

Organized by

Implemented by
News of unsafe products are everywhere!

Back-to-school study finds high levels of phthalate chemicals in kids backpacks, supplies

The Telegraph

'One third of Chinese toys contain heavy metals'

Cadmium, lead found in drinking glasses
雖然大部分可循環再造廢品可以輸港，但部分「電子垃圾」如廢舊電視等入境時須申請許可證，管制甚嚴格，惟不法回收商為選取當中的金、銀等貴金屬牟取暴利，會虛報廢膠入境，回收場拆解這些廢舊電器「淘金」時，因分解工序簡單落後，有毒物質會污染農作物和水源，例如水銀可損害肝和神經系統，對健康的影響不容小覷。

星島日報 – 2014年12月26日

(綜合報道)星島日報報道)本報發現大量「洋垃圾」近期因內地嚴打被斬令退回，部分中港商人乘機大量收購，再運至稱「過漁料」的內地生產剩餘廢料，轉售予本地回收商，當中包括虛報為廢酸覈的「電子垃圾」，令中外廢品大量涌港。回收場挑選分類後，外來廢品搖身一變成「本地垃圾」。業界估計每年至少逾二十億噸垃圾僱送堆填區，當中每天要棄置近四十個密滿廢品的貨櫃，有業界擔心香港會引發環境大災難。

「香港回收過港」（過港）廢棄物料、不良品、次品、廢舊電子產品，包裝費服務。近年本港不少回收廠商傾在外地報廢或網站賣廣告，將收購廣州潮州的焦點放在內地，興過往外界認為香港是「洋垃圾」進入中國的轉口港角色，大變身回收中外垃圾

全球毒垃圾塞爆香港

全球日報 – 2014年12月26日星期五上午5:56

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Toxic Waste in Hong Kong
### Product recalls may lead to financial loss

<table>
<thead>
<tr>
<th>Year</th>
<th>Company Involved</th>
<th>Cause</th>
<th>Financial Loss (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>Sony</td>
<td>Excessively high Cadmium (Cd) in PlayStation Consoles during Christmas</td>
<td>$150 million in lost sales and product reformulation</td>
</tr>
<tr>
<td>2006</td>
<td>Mattel</td>
<td>Lead (Pb) in paint in Barbie dolls</td>
<td>$110 million recall cost including communication campaigns; and stock price down 18%</td>
</tr>
<tr>
<td>2007</td>
<td>RC2 Corporation</td>
<td>Lead (Pb) paint discovered on its Thomas % Friends toy trains</td>
<td>$47.6 million legal fees; and stock price down 50%</td>
</tr>
<tr>
<td>2007</td>
<td>Palm</td>
<td>Treo 650 failing to meet RoHS</td>
<td>Stock price down 14%</td>
</tr>
<tr>
<td>2010</td>
<td>McDonald’s</td>
<td>Cadmium (Cd) in Paint in Shrek-themed Happy Meal glasses (13.4 million)</td>
<td>$3 refund for each glasses, around 40 million in US and Canada</td>
</tr>
</tbody>
</table>

Source: UNEP Report  
Solutions – old vs new

Traditional Solution
• Conduct Separate Tests for Individual Buyers and Compliance
• Extra Compliance Cost due to Extra Testing

Systematic Solution
• Integration with ISO 9001 Standard
• One System to Fulfill Requirements of Multiples Buyers
Stringent Regulations may bring extra cost and legal consequence to SMEs

SMEs need a Solution
Solution - IECQ HSPM QC080000 System

- Established by International Electrotechnical Commission Quality Assessment System For Electronic Components (IECQ)

- Helps manufacturers implement a Hazardous Substance Process Management (HSPM) system in a systematic manner

- Certification tells global marketplace that processes are in place to properly manage products for achieving HSF

- Reduce the risk of non-compliance
No. of IECQ HSPM Companies in Different Countries

CHINA: 1959
TAIWAN: 517
OTHERS: 68
HONG KONG: 13
Benefits of Implementing IECQ QC080000

Case Study: A HK Electronic & Electrical Product Manufacturer

<table>
<thead>
<tr>
<th>Situation</th>
<th>Solution</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports ~ 80 product models to Europe every year</td>
<td>Certified with IECQ QC 080000</td>
<td>Buyers started exempting product testing</td>
</tr>
<tr>
<td>Product testing required for each model, each $10,000 to $15,000</td>
<td>Certification Cost was ~HK$ 25,000</td>
<td>Substantial cost saving – HK$ 500,000 per year</td>
</tr>
<tr>
<td></td>
<td>Surveillance Auditing Cost was ~HK$ 10,000</td>
<td>Recognition of product quality</td>
</tr>
</tbody>
</table>
How do we Assist SMEs?

A 18-month Support Programme, aiming to help SMEs to:

- **Understand** the importance of a HSPM System
- **Acquire** the knowledge of IECQ QC 080000 HSPM system
- **Learn** the principles and essentials of an effective HSPM system
- **Adopt** the HSPM System to enhance competitiveness
Achievements of the Programme

Industry Consultation Visits
Interviews and On-site Visits to 10 Pioneer Companies

Awareness Raising Seminar
More than 140 participants from 60 companies
Achievements of the Programme

**IECQ QC 080000 and Product Recall Workshop**
More than 50 participants

**Compliance News Update in GMN website**
Disseminated to industries bi-weekly
Upcoming Initiative 1 – Online Practical Guide

Production of an online step-by-step guide for effective IECQ QC 080000 implementation

Beneficiaries:

-SMEs which wish to develop their own hazardous management systems to meet regulations and buyers’ requirements
Upcoming Initiative 2 – Product Recall Workshop

Workshop in May 2015 to address compliance strategies to address product recalls

Beneficiaries:

-Key personnel responsible for hazardous substance management for their companies, factory managers, compliance managers, etc.
Upcoming Initiative 3 – Industry Outreach

Visits to 10 industry associations to promote IECQ QC 080000 HSPM and explain the practical guide

Beneficiaries:

- Industry associations for electronics and electrical product manufacturers and associated SMEs in the supply chains, including buyers, wholesalers, suppliers and distributors
Contact Us

Enquiries:
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Ms Candice Li – FHKI (Tel: 2732 3169 / candice.li@fhki.org.hk)

Website:
Hong Kong Green Manufacturing Alliance
http://www.gma.org.hk/

Green Manufacturing Network
http://www.gmn.hkpc.org/