Post-Manufacturing *Traceability* of chemicals in products:
Features & Benefits

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- **Master of Engineering**
  (McGill University + ENST)

- **7 years as a R&D member staff with Texas Instruments**

- **5 years as CEO of Challenge Optimum S.A., Swiss**
  French speaking leader in sustainable management systems consulting & training

- Coordinator & co-author of the publication of a feasibility study of a post-manufacturing traceability system between the PRC and the EU (2008)
Post manufacturing traceability: a new concept

<table>
<thead>
<tr>
<th>Pre-manufacturing</th>
<th>Post-manufacturing</th>
<th>Recycling / Re-use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-manufacturing traceability for inventory and material flow management purposes (EPC coding)</td>
<td>Post-manufacturing traceability for quality, safety, compliance authenticity and social/environmental data checking purposes (EPC coding)</td>
<td>NEW</td>
</tr>
</tbody>
</table>

Manufacturing market

Retail market (including product use by the consumer)

Product's end of life

Time

Post manufacturing traceability: a major challenge

Post-manufacturing traceability is insufficiently developed today with 2 major consequences, in case of problems on the retail market:

1- The cost of recalls of products from the retail market is very high for distributors and manufacturers and affect directly their profitability in large numbers

2- The cost for the society can also be very high when the health of the consumer is impacted
FEASIBILITY STUDY GENESIS (2008)

**Toys, Garment, light industry, fashion**

- Wal Mart, Metro, Coop, Nestlé, Switcher, Conforama
- AQSIQ, DG SANCO, MITI
- BEUC, ANEC, FRC

**Chinese manufacturers**

**Global retailers**

**Regulation authorities**

**Consumer associations**

**Former SGS executives** (COPROD, ICS)

**Public policy Professors**

**Quality control consultants**

**RFID experts**

**Traceability experts**

**Feasibility study**

All conclusions fully shared with CPSC, DG SANCO and AQSIQ

Available on request: david.balme@optimum.ch

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### Key conclusions from feasibility study

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Needs</th>
<th>Suggested action plan for the Regulation authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Post manufacturing traceability has become a must but no real consensus yet on the data to be traced</td>
<td>Need to select and standardize: -key traceability data - EDI</td>
<td>Fund a standardization committee involving regulators, manufacturers, retailers &amp; consumers</td>
</tr>
<tr>
<td>2) The market will not move on a voluntary basis</td>
<td>Need for a regulation that requires an individual tagging of all products as per the new US regulation on toys</td>
<td>Set up a legal framework together with the USA, Japan, China, Korea, Canada &amp; Australia</td>
</tr>
<tr>
<td>3) The technology to implement a traceability system is now available and its price is affordable 0.05-0.5 USD/unit</td>
<td>Need to train key actors of the supply chain of the added value of a traceability system based on harmonized legal framework</td>
<td>Fund awareness sessions on the requirements of the forthcoming regulation (buyers and consumers associations)</td>
</tr>
<tr>
<td>4) The ultimate barriers are political or protect corporate interests</td>
<td>Need to negotiate a gradual implementation through pilot projects</td>
<td>Fund pilot projects</td>
</tr>
</tbody>
</table>
Tracking of **chemicals in products** requires:

- a careful **selection of the data** to be traced: e.g. quality, authenticity, safety and conformance of **products**
- an agreement of international authorities on an **EDI standard**
- a **network of databases** which store key batch information: Manufacturer ID, AQL, critical components, 3rd party certificates
- a **WEB portal** accessible to final consumers and every stakeholder of the supply chain

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Tag N Trace in a nutshell

**International Data Bases**

**TAG N TRACE WEB PORTAL**

- **Manufacturers**
  - Registration of critical components features:
    - Chromium, PVC, brominated flame retardants (PBB, PBBDE), mercury, lead, liquid crystals, cadmium, nickel, lithium
- **Retailers/consumers**
  - Consultation of key final product features
  - **Product Tagging**
  - Is product **safe**?
  - Is product **compliant**?
  - Has product passed quality controls?
  - How can I report product **anomalies**?
  - Is manufacturing process **environment friendly & socially responsible**?
What is behind the web portal?

All data bases working according to the same standards in terms of data types and formats and access procedures.

WEB PORTAL

Manufacturer's access
Fingerprint recognition access

Professional users access
Login + Password

Consumer/retailer access
Free « Google type » access

Search result example

EPC NUMBER ...

The Tag Identification Number is a batch production number composed of 24 digits which is affixed on the product under the Tag. It is also embedded into the RFID chip or part of the bar code.

→ FIRST: Product ID Card

Product Information

Product ID #: 9
Product Name: Teddy Bear
Product Type: Toy
Description: Teddy Bear 30 cm existing in 3 different materials
In Market since: 2006
Designer Name: Frankie Nge
Second: Batch information

- Production Batch Information
  - Batch ID #: 27
  - Batch Quantity: 12000
  - Batch Production Date: 06-15-2009
  - Date of Final QC: 04-14-2009
  - Name of Inspector Final QC: Mrs. Wang
  - Comments: Final QC OK as per client specifications (AQL 0.65%) Sampling plan ISO 2859-1 normal mode

- Certifications
<table>
<thead>
<tr>
<th>Cert #</th>
<th>Scheme</th>
<th>Std #</th>
<th>CoC #</th>
<th>Valid From</th>
<th>Name of Certification Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>En 71-2:2005</td>
<td>18-01-2009</td>
<td>SGS IEC</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>IEC 60068/2008</td>
<td>01-15-2008</td>
<td>UL</td>
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<td>4</td>
<td>CE Marking</td>
<td>04-29-2007</td>
<td>SGS SGS</td>
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<tr>
<td>5</td>
<td>ISO 9001:2000</td>
<td>05-02-2009</td>
<td>SGS IEC</td>
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<td></td>
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<tr>
<td>6</td>
<td>EN 14066:2005</td>
<td>05-02-2009</td>
<td>SGS IEC</td>
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<td></td>
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<tr>
<td>7</td>
<td>ISO 14001:2004</td>
<td>05-02-2009</td>
<td>SGS IEC</td>
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<td></td>
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<tr>
<td>8</td>
<td>Social accountability</td>
<td>02-02-2006</td>
<td>SGS IEC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Critical components
<table>
<thead>
<tr>
<th>QC ID</th>
<th>Date</th>
<th>CC ID</th>
<th>CC Description</th>
<th>CC Quantity</th>
<th>CC Method</th>
<th>Inspector’s Name</th>
<th>Comment</th>
</tr>
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<td>24-02-2008</td>
<td>7</td>
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For regulation authorities, such a system allows to:

- Comply with traceability regulations
- Identify on-line the incriminated batches
- Build knowledge of potentially hazardous substances that may affect health
- Guarantee full transparency on products contents
How to comply with traceability regulations?

- By tagging individually every product
- Through free on-line access to quality related information to the retail market (on line database)
- By unique identification of the product (Authentication)

How to Identify Incriminated Batches?

- Through systematic batch registration of all tagged products
- Through centralized and «smart» web portal to investigate all databases contents
- Through the embedded anomaly reporting feature
How to Build knowledge of potentially hazardous substances?

- Through network of databases aligned on same data format regarding quality features
- Through embedded «smart» type database connected with REACH database
- Through the embedded anomaly reporting feature

How to Guarantee Transparency of product contents?

- Through personalized biometrics based access of production manager to register critical quality data
- By continuously updating the chemical contents of a specific product based on its ID card
- Through independent lab testing
How Tag-N-Trace meets international regulations?

<table>
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<tr>
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<th>Main Beneficiary</th>
<th>US CPSIA</th>
<th>EU Directive</th>
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<tr>
<td>« Put permanent, distinguishing marks on the product »</td>
<td>Ultimate purchaser</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>« Ascertaining manufacturer, location, date of production, cohort information (including the batch, run number, or other identifying characteristic) »</td>
<td>Ultimate purchaser</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>« Carry out an analysis of the chemical, physical, mechanical, electrical, flammability, hygiene and radioactivity hazards that the toy may present »</td>
<td>Regulation authority</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>« Product safety 3rd party certification »</td>
<td>Regulation authority</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>« Retailer’s requirement to inquire »</td>
<td>Retailer or private labeler</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>« Facilitate market surveillance »</td>
<td>Regulation authority</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
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</tbody>
</table>

Conclusion

1 - Traceability of chemicals in products is feasible (technically and commercially speaking)

2 – There is no volunteer approach except if there is a strong pressure from regulation bodies (ex. CPSIA)

3 - Coordination between traceability specialists is required to:
   - Standardize quality related data
   - Select the appropriate EDI to ensure communication between different databases
   - Prove the concept through pilot projects

This action plan budget was submitted to AQSIQ, DG SANCO & CPSC: can UNEP trigger a joint decision for implementation in 2010?
Thank you for your attention!
For more information, please contact

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