

# **Materials Declaration: Practical Tips for Cutting through the Paperwork**

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This presentation will examine materials declaration from a practical point of view, identify the role of materials declaration in the product lifecycle analysis and thus hone in on the practical implications of presenting and exchanging various pieces of data in a materials declaration. A certain emphasis will be placed on current and evolving regulatory needs, such as being able to meet upstream and downstream communications requirements, for example, on product safety data sheets, safe use training multimedia material, authorized uses and test data in a practical, efficient and sufficient manner. Emerging needs for product footprint development will also be briefly addressed.



# Materials Declaration: Practical Tips for Cutting through the Paperwork

By

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Papros Inc.

# “Material Declaration” versus “Footprint”

- Why a material declaration is much more than a declaration of substance composition
- Includes compliance information about substance categories in product as well as layer wise composition breakdowns
- Could include manufacturing information
- Could include safety data sheets, safe use training multimedia material, links to test data etc.

# Materials Declaration

- Definitions-Raw material, parts, products
- Electronic data formats- open formats versus proprietary
- Need for supply chain interoperability
- Need to maintain data trail for due diligence and possible audits.
- Industry standards series for MCDs – IPC 175x series
- Free tools- SCRIBA, MRPRO(TM) AJAX viewer

# Types of Materials Declarations

- Simple yes/no to questions regarding entire sets of regulations
- Listed substance category or substance threshold exceedance questions, and data
- Homogeneous layer level detailed material information and substance composition reporting
- Details of manufacturing information

# Ways a company may use information in material declarations

- Roll up information if using supplier part in an assembly
- Use as a legal document in a compliance audit or defence in litigation
- Screen supplier parts versus other supplier parts and eliminate purchase of parts with “regulated” or “potential to be regulated” substances

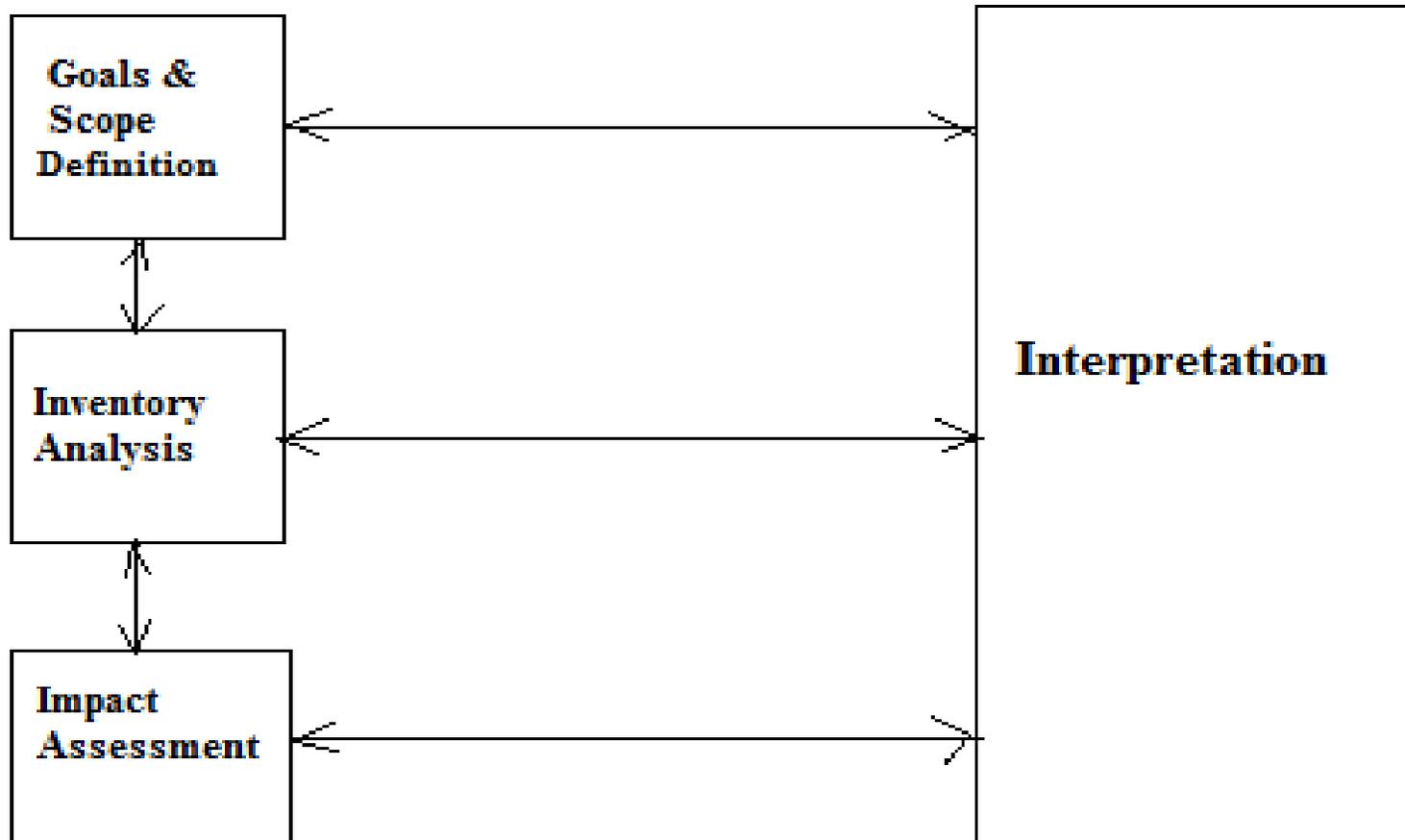
# Where electronics industry today is vis-a-vis material declarations and the environment

- Spate of global product level regulations - current and evolving
- Followed regulations on disposal at End of Life of electronic products
- This was preceded by many years of environmental regulation at the facility and enterprise level

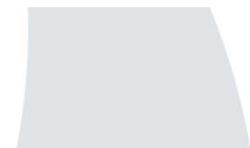
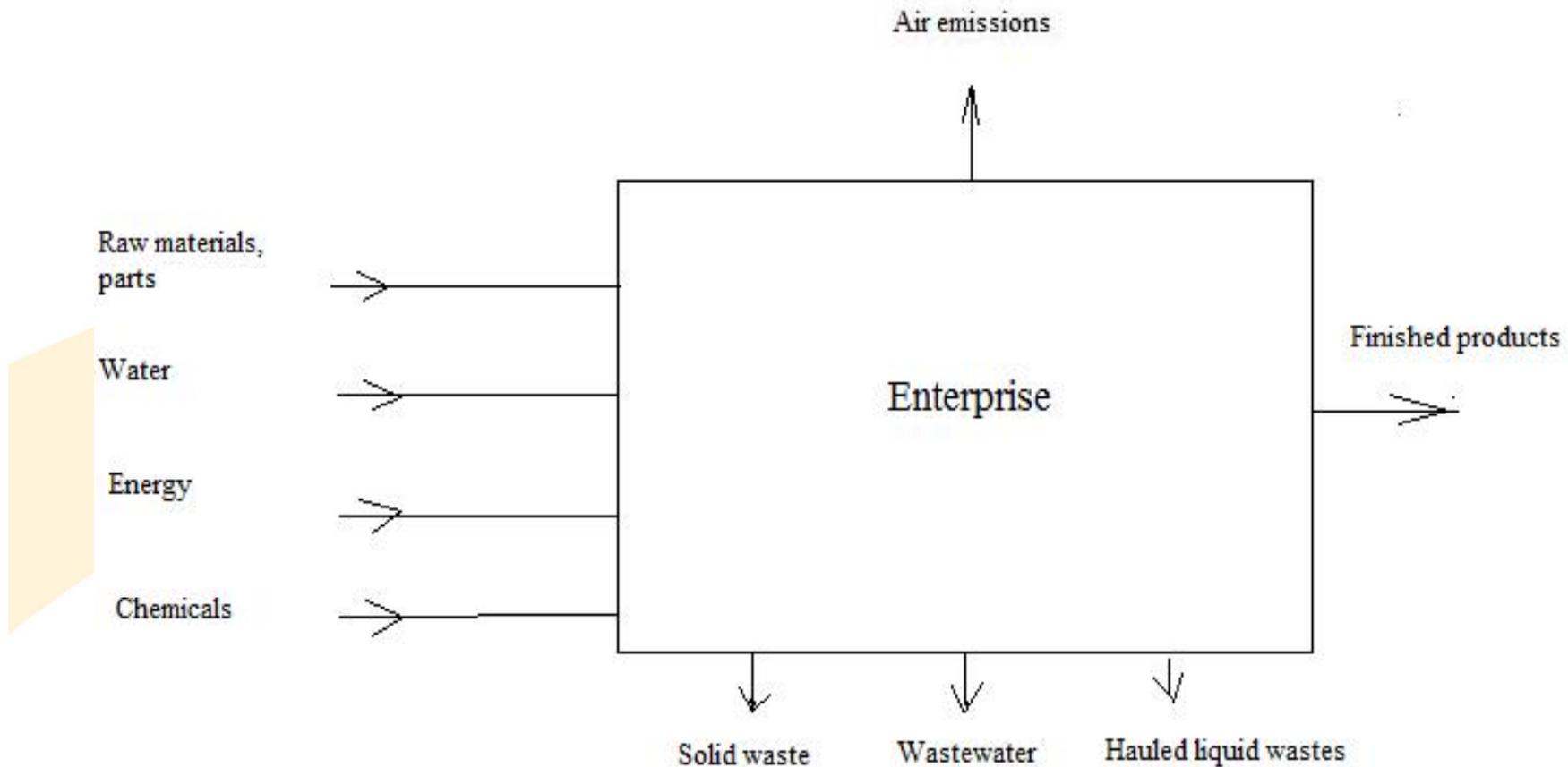
# Historic genesis of the move to be Clean, Green and Lean

- First there was the move to be Clean- Federal, State and local environmental regulations. Time period-80s and 90s
- Then came the move to be green -2003-2007 (pre- and post-RoHS I, pre-REACH)
- Now Lean is imposed on everyone because of the economy,

# Typical lifecycle assessment



# The typical enterprise



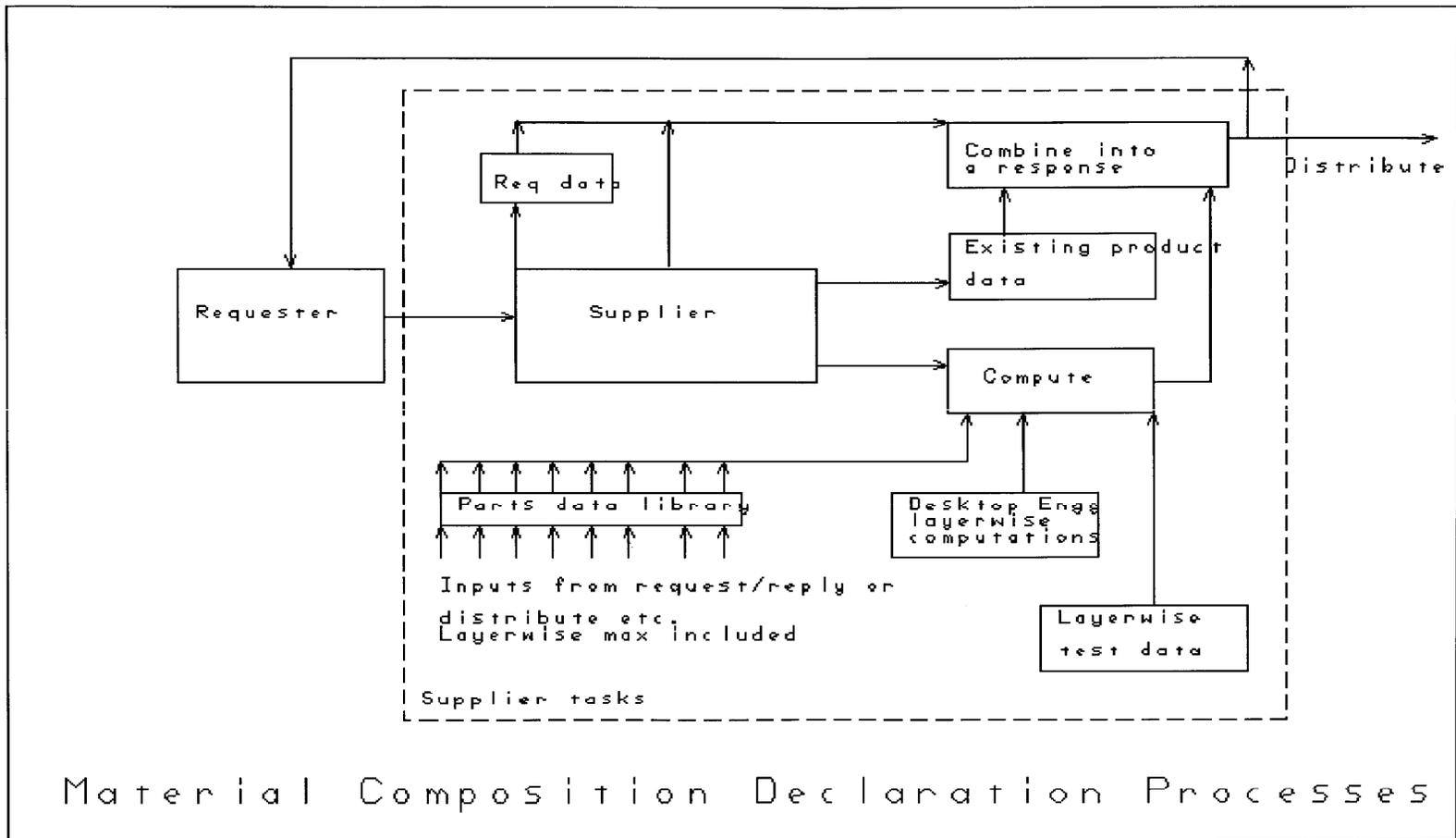
# Global product eco-regulations

- States side- Montebello (North America), Canadian Chemicals Management, California GCI, Maine, Massachusetts etc
- RoHS, RoHS-like, REACH, EuP others
- Other (of equal importance)-battery, packaging etc, labelling etc
- Many other countries and states lists
- Deal straight on this fragmented issue-easy
- Data needs-must easily scrub on the fly
- Product footprint tailor each need

# Product footprint concept

- Product composition; homogeneous layers
- Usage quantities and usetype
- Manufacturing information
- Footprint during product's production
- End of life footprint
- Power usage on, standby, off modes, other
- Other direct specifications, greenhouse etc
- Ensure footprint parameter details scalable

# Procuring footprint information



# Supply Chain Change Optimization Management SCCOM

- Change is a fact of life, build in change
- Obtain visibility for the change- visibility of data for people, visibility of data for programs that use the data
- Create strategies to continuously evaluate potential risks from actual changes, and if finances permit, any foreseeable changes also.

# Product footprint info transfers

- Request for MCD
- Receipt/ capture of requester information
- Search and Find MCD if already computed
- Compute MCD if not already done-compare and verify
- Merge captured requester information
- Digitally sign and send back to requester
- Alternately, make distributable data files securely available for downloads and viewing.

# Generating material content info

- Merge BOM x Raw materials/Assemblies information
- Include non-BOM usage of material
- Performing engineering calculations when acceptable-composition by homogeneous layers
- Testing materials when composition unknown-composition by homogeneous layers

# BOM to compliance report -steps

Process Steps	Process	Process Description	Input/ Output
1	Downloading of Manufacturing BOM	Copy of <u>Manuf</u> BOM is downloaded from Agile	<u>Manuf</u> BOM
2	Convert Format	Convert BOM format to required format	BOM in <u>propar</u> Format
3	BOM to <u>Sursh</u>	<u>BOMs</u> into Survey sheets	Blank Survey Form
4	Data Analysis/review	Review accuracy of survey forms	Approved copies BOM and Survey Form
5	Email survey sheet to Supplier	Supplier completes the survey	Supplier e-mail list and survey forms
6	Receive completed copy of Supplier Survey sheet	Review Suppliers' response	An approved copy of Supplier completed Survey
7	MRPRO ( <u>sursh</u> - BOM)	Supplier survey response are uploaded into the BOM	BOM with Survey Data
8	Data Analysis/review	Validate if the data are complete and accurate	BOM with Survey Data
9	Report	Generate desired output report	Final Report

Select table row

# Create approved component list

ACL (Approved Component List) Compliant Status				
<b>Legend:</b>				
1* Compliant-Banned, <b>RoHS</b> Prohibited, Reportable, <b>REACH</b> and Halogen-free				
1) Compliant-Banned, Prohibited, Reportable, <b>REACH</b> , Halogen-free, <b>RoHS w/ exemption compliant</b> )				
2) Banned, <b>RoHS</b> , Reportable, <b>REACH</b> and Halogen-free compliant				
3) Banned, <b>RoHS</b> , Prohibited, <b>REACH</b> and Halogen-free compliant				
4) Banned, <b>RoHS</b> , Prohibited, Reportable, and <b>REACH</b> compliant				
5) Banned, <b>RoHS</b> , <b>REACH</b> and Halogen-free compliant				
6) Banned, <b>RoHS</b> , Prohibited and <b>REACH</b> compliant				
7) No Response or information from the manufacturer				
<b>Preferred</b>				
Compliant Status	Internal part number	Description	Manufacturer name	Manufacturer part number
	2222946	LABEL, CAUTION	TRUTECH INDUSTRII	98001
	2222946	LABEL, CAUTION	RMHYR	CAUTION-61 X 76MM
	2222379-R	WASHER, #4 FLAT I ZYORD		CONCORD 760-2502
1*	2222379-R	WASHER, #4 FLAT I MAYTONE		KEYSTONE 3358
	2249422822-00	FOAM,8"X6 1/2"X1/2' OPEN SOURCE		OPEN SOURCE
	224942283-00	BOX,8 3/4"X6 3/4"X2	OPEN SOURCE	OPEN SOURCE
	22494228-00	BOX,18"X12 5/8"X7 3/8	OPEN SOURCE	OPEN SOURCE
1*	224952230-00	BAG, 1 9/16" X 2 3/4'	OPEN SOURCE	OPEN SOURCE

# Create approved vendor list

## AVL (Approved Vendor List) Compliant Status

### Legend:

- 1\* Compliant-Banned, **RoHS** Prohibited, Reportable, **REACH** and Halogen-free
- 1) Compliant-Banned, Prohibited, Reportable, **REACH**, Halogen-free, **RoHS w/ exemption compliant**)
- 2) Banned, **RoHS**, Reportable, **REACH** and Halogen-free compliant
- 3) Banned, **RoHS**, Prohibited, **REACH** and Halogen-free compliant
- 4) Banned, **RoHS**, Prohibited, Reportable, and **REACH** compliant
- 5) Banned, **RoHS**, **REACH** **Preferred**
- 6) Banned, **RoHS**, Prohibited and **REACH** compliant
- 7) No Response or information from the manufacturer

Compliant Status	Manufacturer name	Manufacturer part number
	TRUTECH INDUSTRII	98001
	RMHYR	CAUTION-61 X 76MM
	ZYORD	CONCORD 760-2502
	MAYTONE	KEYSTONE 3358

# Create product compliance list

## Product Compliant Status

Item	Part Number	Product Description	RoHS	REACH	HALOGEN-FREE	Internal 2.3
1	111113700-R	QUO-500 RoH	Y	Y	Y	N
2	111113700-R	QUO-500 RoH	N	N	N	N
3	111113700-R	QUO-500 RoH	N	N	N	N

Legend:

a) This document is for **Internal Use Only**

b) Y- Compliant to EU RoHS 6 and REACH

c) NC - Non Compliant (not all suppliers are compliant to reportable, banned, prohibited and Halogen-Free)

d) Compliant status excludes packaging material (labels, Boxes, etc)

# Efficiently managing data

- Keep digitally signed files for reference
- Keep the associated xml data in a secure environment for easy access/computation
- xml data can be kept as such and accessed as needed-no other database is needed
- Archival and storage of both sets of data separately
- Use data efficiently to compute, compare and verify

# Entering product/subproduct info

Product: (itemName="ChipOnABoard5" itemNumber="exchpnbrd5")

Product | Homogeneous Material | Material Summary | Material Group | Query/Reply Material | Manufacturing Information

### Manufacturing Process Information

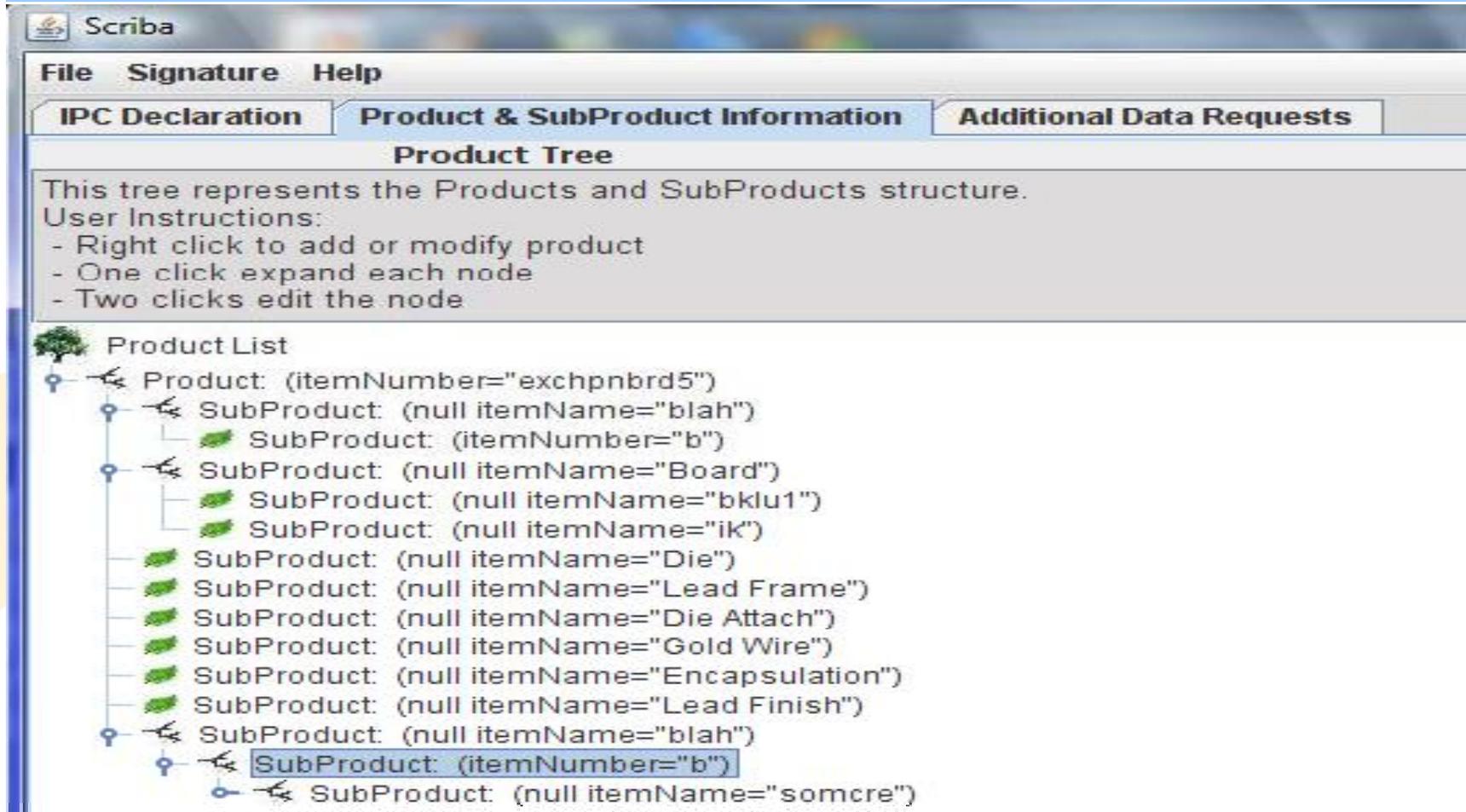
J-STD-020 MSL Rating	<input type="text"/>	▼	Ramp Down Rate	<input type="text"/>	Preheat
Classification Temp	<input type="text"/>		Time Above 217	<input type="text"/>	Pack
Max Time Within 5	<input type="text"/>		Preheat Max Temp	<input type="text"/>	Com
Ramp Rate	<input type="text"/>		Preheat Duration	<input type="text"/>	
Comments	<input type="text"/>				

### Solder

Nbr of Reflow Cycles	<input type="text"/>	▼	Max Total a Wave Time	<input type="text"/>	Max
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### PSL Rating

# Subproducts within subproducts in a product



The screenshot shows the Scriba application interface. The title bar reads "Scriba". The menu bar includes "File", "Signature", and "Help". There are three tabs: "IPC Declaration", "Product & SubProduct Information" (which is active), and "Additional Data Requests".

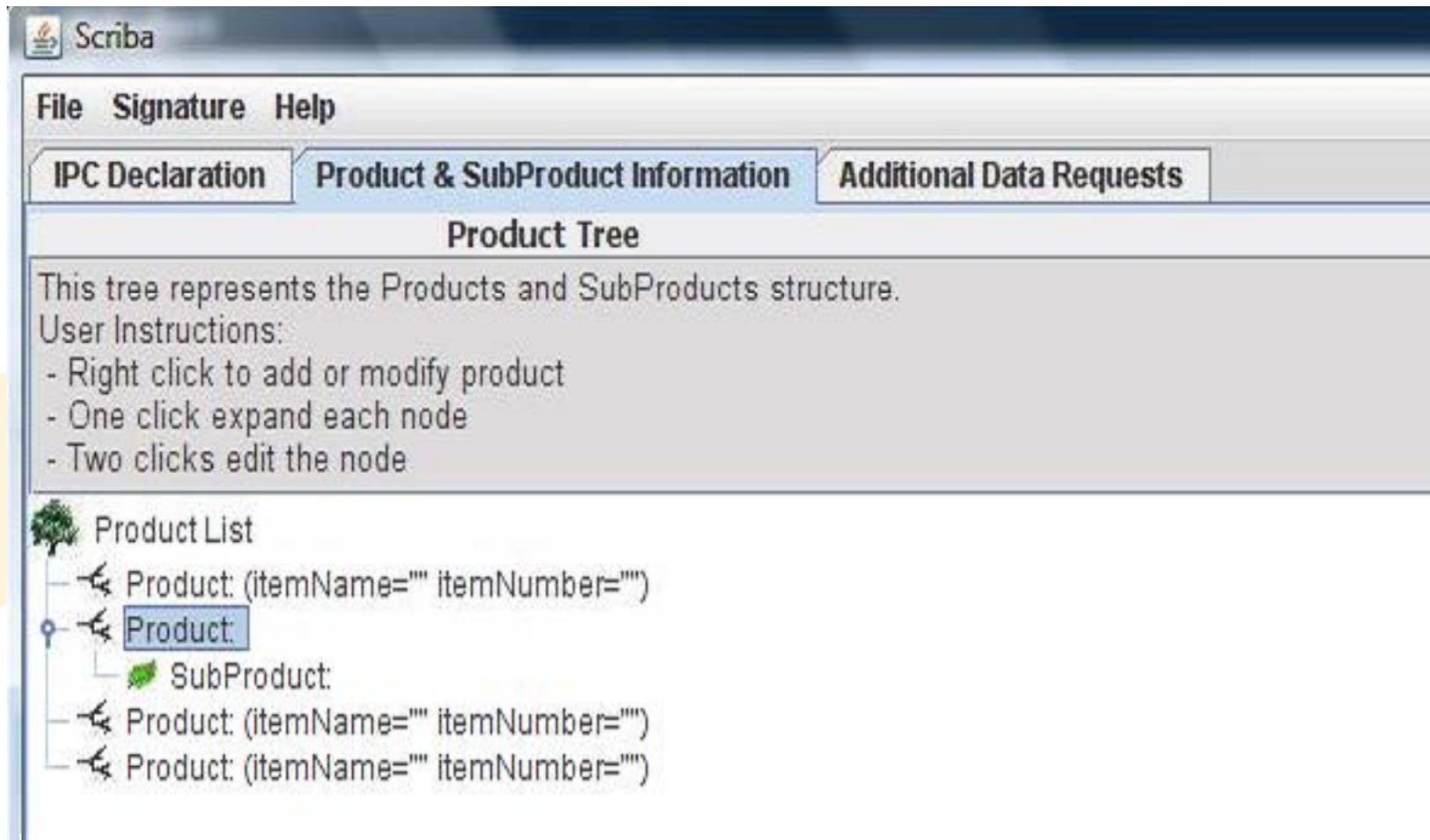
The main content area is titled "Product Tree" and contains the following text:

This tree represents the Products and SubProducts structure.  
User Instructions:  
- Right click to add or modify product  
- One click expand each node  
- Two clicks edit the node

Below the instructions is a "Product List" tree structure:

- Product: (itemNumber="exchpnbrd5")
  - SubProduct: (null itemName="blah")
    - SubProduct: (itemNumber="b")
  - SubProduct: (null itemName="Board")
    - SubProduct: (null itemName="bklu1")
    - SubProduct: (null itemName="ik")
  - SubProduct: (null itemName="Die")
  - SubProduct: (null itemName="Lead Frame")
  - SubProduct: (null itemName="Die Attach")
  - SubProduct: (null itemName="Gold Wire")
  - SubProduct: (null itemName="Encapsulation")
  - SubProduct: (null itemName="Lead Finish")
  - SubProduct: (null itemName="blah")
    - SubProduct: (itemNumber="b")
    - SubProduct: (null itemName="somcre")

# Survey sheet format



The screenshot shows the Scriba application window with the following components:

- Menu Bar:** File, Signature, Help
- Navigation Tabs:** IPC Declaration, Product & SubProduct Information (selected), Additional Data Requests
- Section Header:** Product Tree
- Text:** This tree represents the Products and SubProducts structure. User Instructions:
  - Right click to add or modify product
  - One click expand each node
  - Two clicks edit the node
- Product List:**
  - Product List (tree icon)
  - Product: (itemName="" itemNumber="") (tree icon)
  - Product: (tree icon)
  - SubProduct: (leaf icon)
  - Product: (itemName="" itemNumber="") (tree icon)
  - Product: (itemName="" itemNumber="") (tree icon)

# Requester and Supplier info

Scriba

File Signature Help

IPC Declaration Product & SubProduct Information Additional Data Requests

**Supplier Product Declaration**

This software was developed at the National Institute of Standards and Technology by employees of the Federal Government in the course of their official duties. Pursuant to title 17 Section 105 of the United States Code this software is not subject to copyright protection and is in the public domain. Scriba is an experimental system under development. NIST assumes no responsibility whatsoever for its use by other parties, and makes no guarantees, expressed or implied, about its quality, reliability, or any other characteristic. We would appreciate acknowledgement if the software is used.

Beta software Test 2  
This document is a supplier declaration for a product or family of products.  
See IPC Web Site for Information on IPC-1750 Series Standard <http://www.ipc.org/IPC-175x>

Form Type \* Request/Reply Version 2.0

Sectionals \* MaterialInfo ManufacturingInfo  
Subsectionals \* A - Query/Reply B - Material Group C - Material Summary D - Homogeneous Material

**Requester Information**

Company Name \* ReqCo Contact Name \* Jess Laname My supplier ID intsupplierid  
Request Document ID 1 Contact Title JustAWorker Destination www.examplerepco.com  
Company Unique ID Contact Phone \* 555-1212 Destination : URL or Email Address  
Unique ID Authority Contact Email \* a@a.com  Supplier Choice  
Request Date \* Requester Comments include as many substances as you have info on, but I dont need 100 percent disclosure Supplier provides Mfr Item Version & Manufacturing Site  
Respond By Date

Lock Request Fields Additional Details

**Supplier Information**

Company Name \* Its Unreal Corp. Contact Name \* Jill Lasnam Authorized Representative \* John Lasnam  
Response Document ID Anid1 Contact Title dep chief Representative Title president  
Company Unique ID Contact Phone \* 555-2045 Representative Phone \* 555-4080  
Unique ID Authority Contact Email \* j@.com Representative Email \* join@jas.com  
Response Date \* Supplier Comments

Additional Details

**Uncertainty Statement**

**Legal Statement**

Legal Declaration \* Custom Supplier Acceptance \* Accepted

Supplier, after performing industry acceptable due diligence efforts, hereby states that the information enclosed herewith is true and accurate to the best information available.

# Attachments info at bottom

Legal Declaration \* Custom ▼

Supplier, after performing industry acceptable due diligence efforts, hereby states that the information enclosed herew

**Attachment**

	Name	File Type	Attac
+ -			

# Efficiently distributing REACH required safety and safe use data

- Products containing SVHCs above specified threshold must be accompanied by info that specifies the concentration
- Product Safety Data Sheet must be included – specify authorized uses
- Safe Use information for authorized uses
- Specify End of Life disposal method
- Customers must be able to access latest info

## Practical issues in distributing other data (such as test data)

- It will be easier to load the data on a website and just distribute the link as an attachment for large files, such as test data
- Multimedia files for training in safe use of product(s) will also be large and same procedure is recommended
- Product safety data sheets and safe use information files can be attached and/or links can be attached.
- Specify links in any case so users can get the latest information

# Free AJAX viewer shows links

MRPRO-Compositions, Communications, Footprints and Obsolescence

Version 5.1 sub Dec 08

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Enter remote host address in left hand box..... Enter part number in the right hand

Click the button after entering part number

Certificate of Compliance Query List Replies-Yes/No

somepart6.xml

# Free AJAX viewer shows links

Part-number : somepart6  
Part-name : somedescription  
Supplier-name:Its Unreal Corp.  
Contact name(at Supplycompany) :Jill Lasnam  
Contact-email:j@j.com  
Contact-phone:555-2045

Attachment: [Generic Safety Information Sheet.pdf](#)

Attachment: [petp.htm](#)

## Certificate of Compliance Query List Yes or No Certificate

MRPRO Version 5.1 sub Dec 08, Copyright 2008 Papros Inc.

NOTE: A blank cell or a "-" entry indicate "No information", not a zero value

### Question Statement

Product(s) does not contain RoHS restricted substances per the definition in IPC 1752



# Conclusions

- Material declaration needs have changed over the last three years
- IPC 175X series is versatile to support the needs of the electronics industry and more.
- The move from large file sizes to smaller file sizes (signed XML files) will enable smooth and seamless exchange of data across the supply chain.