REACh : Device Maker Perspective

SESHA TEXAS CHAPTER MEETINGS

September 2008

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Agenda

- REACh and its effect on semiconductor manufacturers
- Main REACH Elements & Obligations
  - Pre-Registration/Registration
  - Notification/Communication
  - Authorization
- Main Concerns
- Next Steps

Note: The facts and scenarios presented are based on the currently available information, but some conclusions may change for there are several issues that are evolving and there will be other changes and guidance as implementation continues.

REACH – Means Registration and so much more

>30,000 substances

Registration of Existing Chemicals

Substances

Substances in Articles

Preparations

Pre-registration

Phase-in substances

Authorization

Candidate list

SVHC

Suppliers

Importers

SEIFS

Only Reps

RIPs

Distributors

Chemical Safety Reports

ECB

Exposure scenarios

Down stream users

Member states

Customers

IUCLID

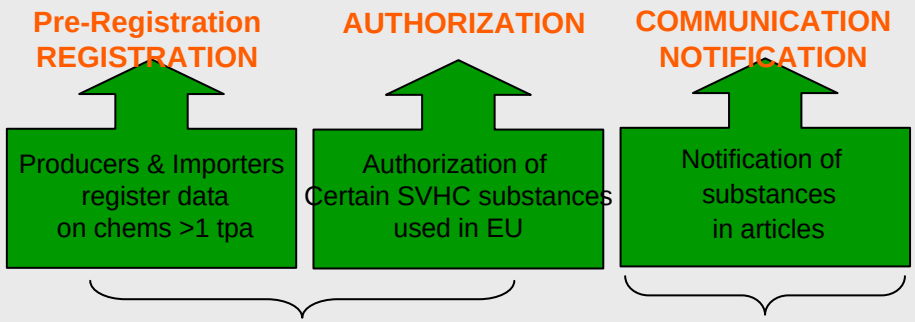
Commission

What is REACH?

Overview

- REACH: "**R**egistration, **E**valuation, **A**uthorization and restrictions of **Ch**emicals"
- A new chemical regulation that will revise the manner in which existing chemicals are **regulated** and **used** in Europe
- Similar to other chemical regulation, but:
  - Requires tighter supply chain integration
  - Use is specifically regulated
  - Shifts the responsibility of chemical safety from Government to Industry
- Became effective June 1, 2007
- Will be phased in over the next 11 years

Aspects that affect Supply Chain



Manufacturers of chemicals

- Own most of the REACH compliance

As a **Downstream User** of chemicals has a duty to:

- Provide supplier with use and exposure information for certain substances

Manufacturer of Articles may have a duty

- To notify agency
- Communicate to customers

Why is REACh important to the Semiconductor Manufacturers ?

REACh regulates:

- Substances on their own (Gases, pure chemicals)
- Substances within mixtures (Photo-resists, slurries)
- Substances within Articles (Tools, spares, chips)

Our Scope:

- Manufacturing sites in Europe that use and import chemicals
  - Use hundreds of chemical products
- Produce, use, and import Articles into EU
- Sell products to customers who import Articles to EU
- Source materials from Europe
- Purchase from a few hundred different suppliers from all over the world
- Diverse chemical Supplier base

REACH LIKE RULES MOVING ACROSS THE GLOBE

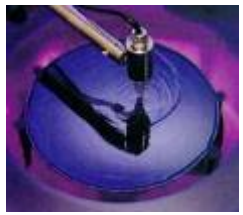
Note: Import means – “physical introduction into the customs territory of the community”

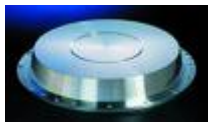
Semiconductor Implications

Our Industry supply chain can be manufacturers, importers, and users of substances, preparations and articles

Substances

Preparations





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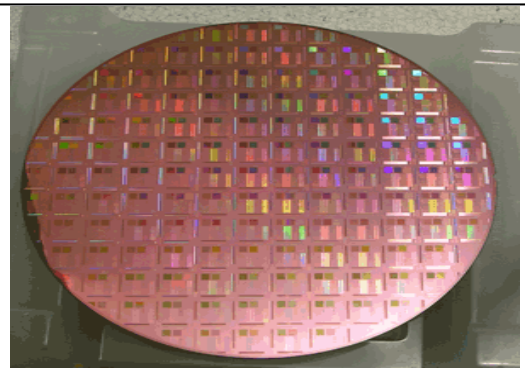
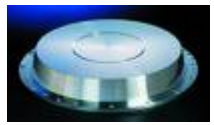
What's an Article? Rip 3.8





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What are the Main REACh Obligations for Device Manufacturers?

Answer – That depends whether:

1. Import substances from Outside EU – importer obligations (unless non-EU supplier appoints an Only representative)
   - Pre-registration, Registration, Authorization
2. Use substances supplied by an EU supplier – DU obligations
   - Ensure you are using chemicals in accordance with SDS and exposure scenario if applicable
3. Produce Articles – article producer obligations - Are chips articles or products ?
   - Do they contain SVHC's – do you have to notify?
4. Import Articles from outside the EU – importer obligations (unless non-EU supplier appoints an Only representative
   - Do we import tools, spares? Have the suppliers of the tools, spares done all of the proper notifications?
   - Do chemicals kits and chemicals come in the tools?

Device Maker REACh Challenges

- Understanding internally and through the supply chain
  - Which chemical substances and materials are used
  - Where each substances is used – Exposure scenarios
  - Who is supplying them to us – multiple suppliers
  - Where is the supplier located – EU or non-EU
  - How much is being supplied – registration thresholds
  - Who is the “LEGAL” importer?
  - Who is going to PRE-REGISTER?
- Finished Products
  - RoHS on steroids for all “articles”
  - What substances are in products?
    - Do we have to register, notify and/or communicate them

Chemicals Used in Semiconductor Manufacturing

- **@Over 500 Products (Gases, Liquid chemicals, metal targets)**
  - @Over 750 Substances/Ingredients
- **@Over 75 Suppliers (Small & Large)**
- **Some substances will be classified as SVHC's – will they be subject to authorization?**

Typical Chemical Inventory becomes a lot more complicated

			REACH CHEMICAL INVENTORY						REGISTRATION : TIMING - 2007 start			
Part Number	Product Name	Substances/Ingredients	Manufacturer	EU or Legal entity	REACH STATUS	CAS #	EINECS # (existing)	ELINCS # (new)	>1000 tpa CMR, PBT/vPvB > 100 (2007-2010)	100-1000 tpa (2010-2013) CSA/CSR	>10 tpa (2013-2018) CSA/CSR	> 1 tpa (2013-2018)

Authorization Status				
CMR, PBT, VpVB, Endocrine disruptor (NO THRESHOLD)	Use/ Process	Exposure data	Substances in Article (end product)	Notes

Registration Action Timeline

REGULATORY TIMELINE

Supplier Actions

Pre-registration
Consortia
SEIFS

SEIF Role
Joint Data
Registration dossier

Submit data dossier
Submit CSA/CSR/ES
Register all uses

Industry Actions

Lobby

Prepare supply chain communications (ESIA, SEMI, SEMATECH projects), Build industry consensus to minimize level of materials declaration required in supply chain

Pre-registration

- What
  - Duty of potential registrants if you want to phase in your full registration of
    - Every existing substances > 1tpa
    - Every Article containing a substance >1tpa that is intended to be released
- Who
  - Must be done by an EU entity (mfg, importer, only rep)
- When – NOW until November 30, 2008

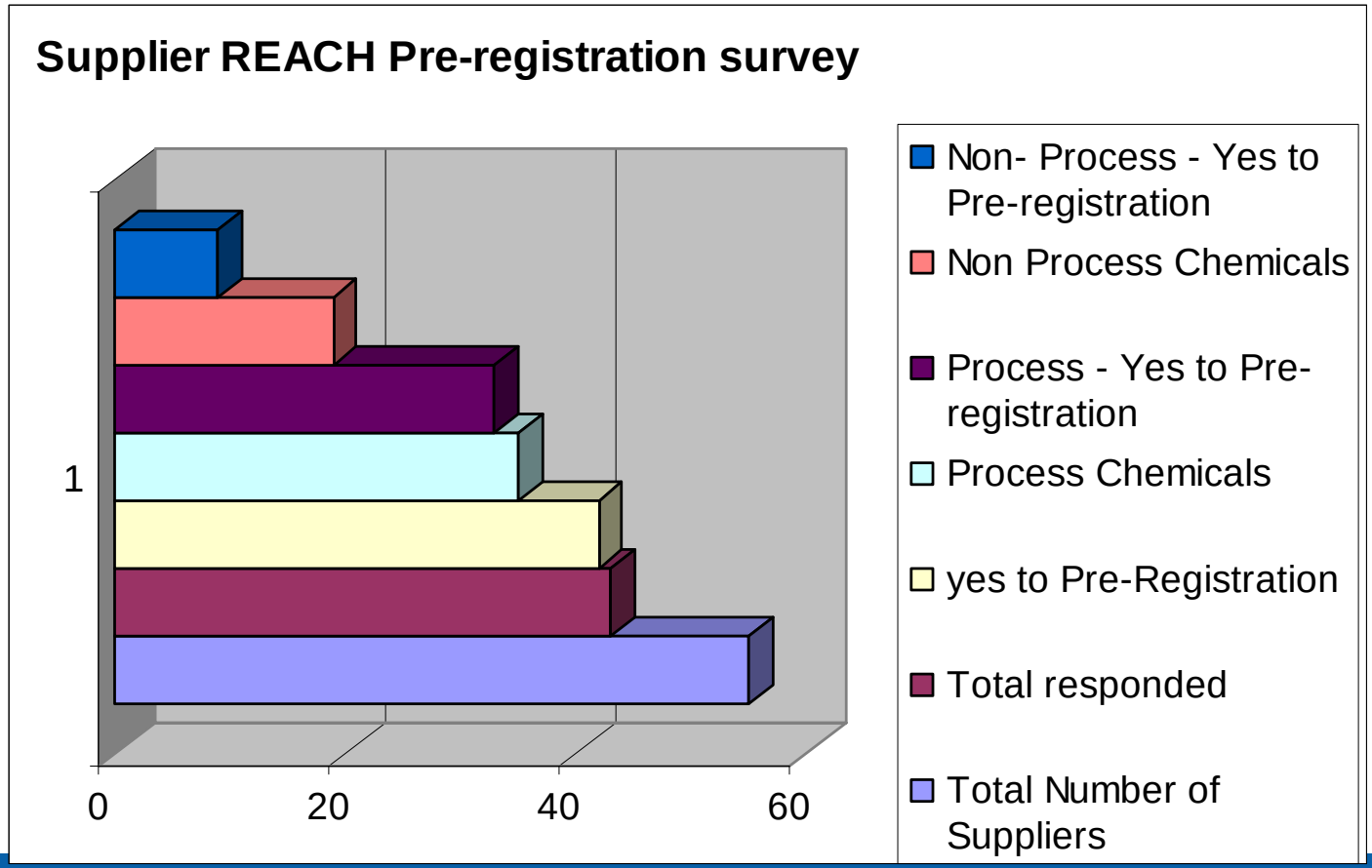
Our Strategy

- Engage in Industry consortia activities
- Requesting ALL suppliers (EU & Non-Eu) to pre-register
- Sent REACH communication to all suppliers
- Sent survey to all suppliers asking about REACH readiness
- Recently sent letter requesting pre-registration status of each substance supplied

Pre-registration-Things to Consider

- What if suppliers do not Pre-register
- Should we pre-register “just in case” – some DU are
- What type of enforcement will we see post pre-registration deadline
- What level of due diligence should a downstream user take

Supplier Pre-registration Survey Results



Note: Chemical Supplier Survey and Tool suppliers who supply chemicals

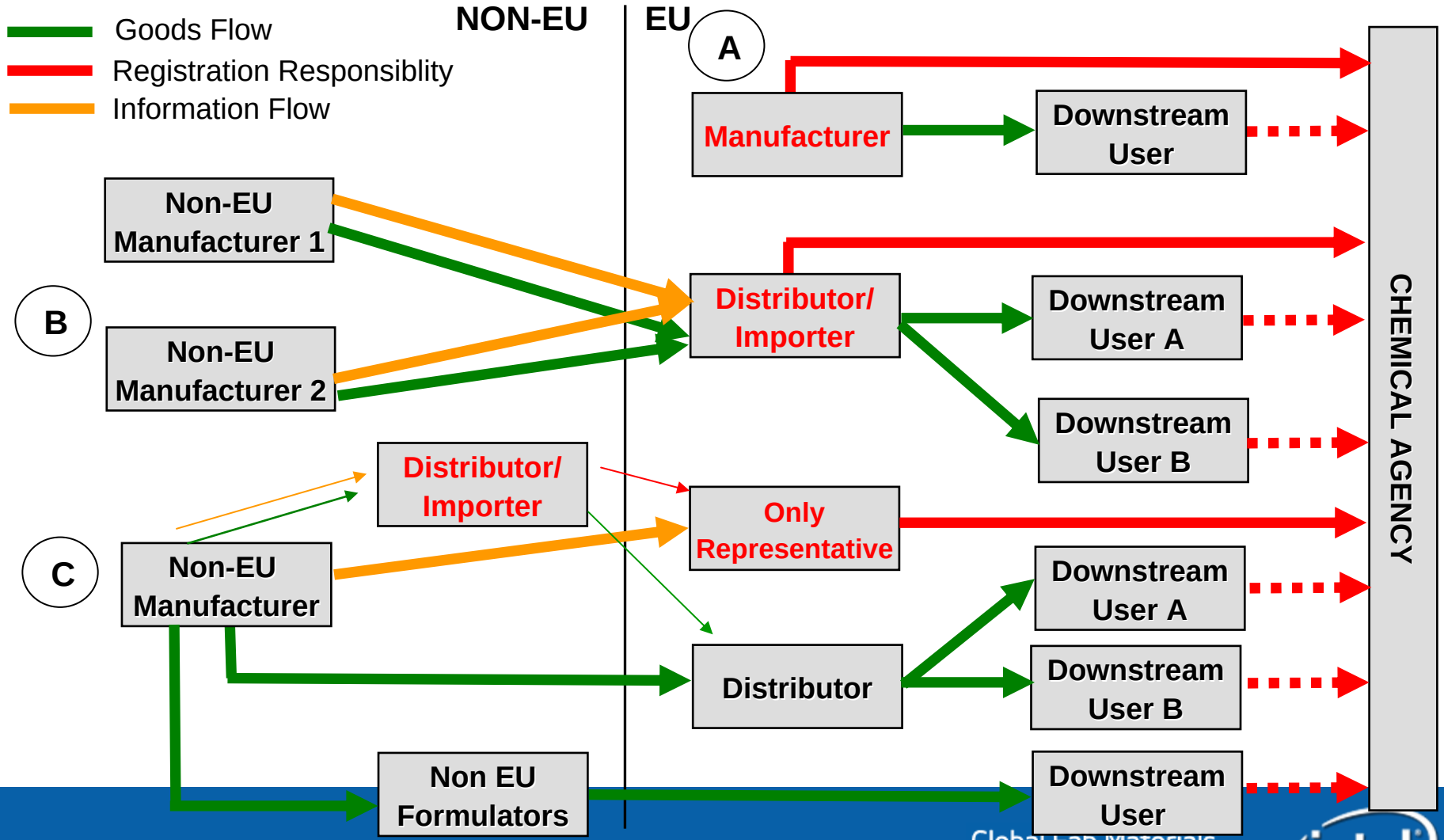
Registration

- What – all the substances that were pre-registered
- When
  - Phased in over the next 11 years
- How
  - Same substance SEIFS (substance exchange information forums)
  - One Data dossier
  - Individual supplier SDS and Info
  - Use exposure scenarios required if >10 tpa

Registration – Things to consider

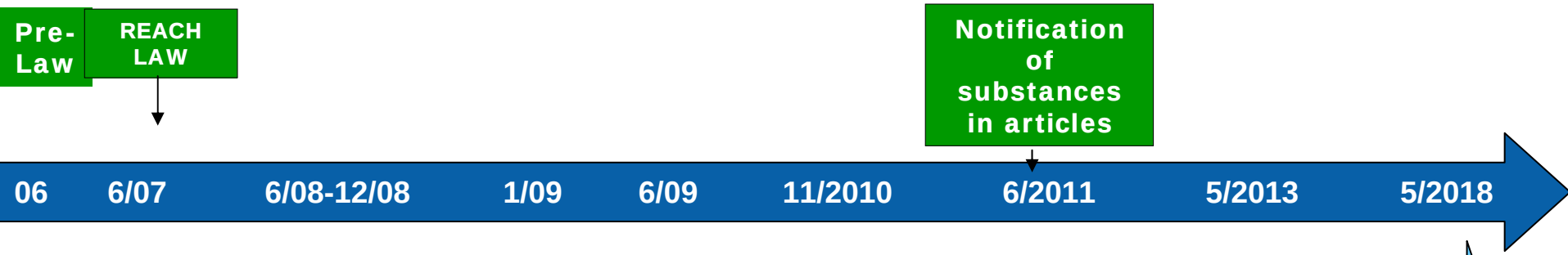
- How will you manage all of the new REACH Safety Data Sheets
  - What about the new GHS MSDS system
- How will you determine if your already approved chemical products and each ingredient have been registered
- How are the suppliers going to “register” my use
- How will you audit your site RMM measures against the new SDS exposure scenario

Possible Registration Scenario‘s



Notification Action Timeline

REGULATATORY TIMELINE



Supplier Actions:

Parts coming and imported to EU site

Components that may be in products

Industry Actions

Lobby

Build industry consensus to minimize level of materials declaration required in supply chain

If required, article notification

Substances In Articles

- SVHC – Substances of Very High Concern; are chemicals that are classified as Carcinogen, Mutagen, & Reproductive toxins, category 1 & 2, PBT, vPvB, endocrine disruptor, other
  - Exists
- Pre-Candidates – List of SVHC's submitted by member states and others to be considered for candidate list
  - Exists
- Candidate List – List of SVHC for potential inclusion in Annex XIV – Authorization list
  - Does not exist
- Authorization List – Substances pulled from candidate list in a priority manner
  - Does not exist

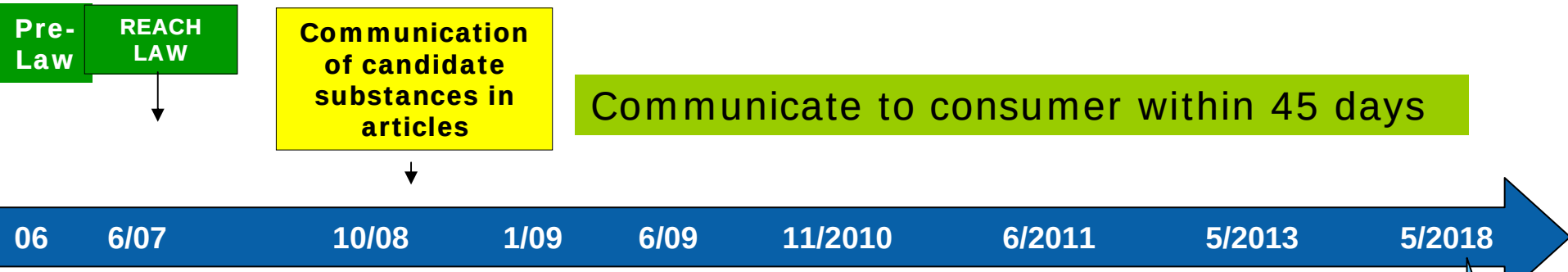
Article: Registration and Notification Requirements

Producers/importers of articles must

- Notify Agency if Contains substance identified as an SVHC:
  - Present in quantities >1 tpa per P/I;
  - Present in concentration above 0.1% ww; and
  - Risk of human or environmental exposure during use (including disposal).

Communication Action Timeline

REGULATATORY TIMELINE



Customer & Consumer Actions:

Requests for material declaration of products you sell

Industry Actions

Lobby

Build industry consensus to minimize level of materials declaration required in supply chain

If required, article notification

REACH Article 33 Supply Chain Communication Requirements

- **Report** Substances of Very High Concern (SVHC) > 0.1 wt% (or > 1,000 ppm) on candidate list
  - ***Note***: ***This is not a chemical ban, just a reporting obligation***
- 16 Draft SVHC substances posted on ECHA web site

- Anticipate first SVHC list to be finalized ~ Oct 2008 (based on draft 16 substances)
  - New lists will continue to be published in 2009+
- Legal Requirement – All suppliers are required to meet legal requirement per their contracts
- Respond within 45 days of customer or consumer inquiry
- Electronic Industry is updating the Joint Industry Guide (JIG) "*Material Composition Declaration for Electronic Products*" for REACH reporting
  - Free download of existing standard at http://eia.org
  - IPC 1752 electronic data exchange schema free download at http://ipc.org/ipc-175x
  - Contact Joanne Sonenshine, CEA if interested in participating in JIG update activities at (703) 907-7631

Table 1 – 2008 Proposed REACH SVHCs

Substance Name	CAS #	Common Uses/ Most likely location
Anthracene	120-12-7	Wood
4,4'- Diaminodiphenylmethane	101-77-9	Foam packaging (polyeurathane)
Dibutyl phthalate	84-74-2	Soft plastics/PVC
Cyclododecane	294-62-2	flame retardant (HBCDD Production)
Cobalt dichloride	7646-79-9	Desiccant/ Moisture Sensitivity HID cards
Diarsenic pentaoxide	1303-28-2	Wood
Diarsenic trioxide	1327-53-3	Wood
Sodium dichromate, dihydrate	7789-12-0	Wood, colorant, glass
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	PET, Blister packaging
Bis (2-ethyl(hexyl)phthalate) (DEHP)	117-81-7	Soft plastics/PVC
Hexabromocyclododecane (HBCDD)	25637-99-4	EPS, XPS, HIPS
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	metal lubricants, rubber, paint, sealants, leather, textiles
Bis(tributyltin)oxide	56-35-9	biocides, industrial water treatment etc
Lead hydrogen arsenate	7784-40-9	wood, pesticides, EEE, textiles, glass, plastic/pvc
Triethyl arsenate	15606-95-8	wood, pesticides, EEE, textiles, glass, plastic/pvc
Benzyl butyl phthalate	85-68-7	Soft plastics/PVC

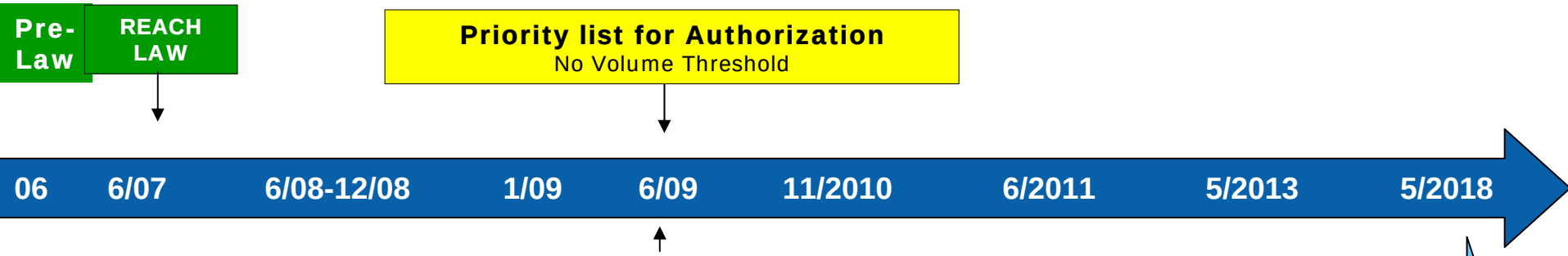
For Additional Information – Please visit ECHA web site at URL
http://echa.europa.eu/consultations/authorisation/svhc/svhc_cons_en.asp
Rev. August 2008

Approach – Substance in Articles Communication

- Standard but dynamic Dear Customer letter
- Reviewing all product categories against potential candidate list
  - Phase 1 – Look at current data
  - Phase 2 – In house screen testing
  - Phase 3 – Third party test data of “high risk” articles
  - Phase 4 – Customer communication documents
- Current data suggests products do not contain any of the 16 proposed candidates in quantities greater than > 0.1 %

Authorization Action Timeline

REGULATORY TIMELINE



Supplier Actions

Lobby Pre-work Industry projects

Identify products that may be subject to authorization

Identify products on the priority list for authorization

Prepare application & apply for authorizations

Industry Actions

Lobby

lobby for chems of critical use to be taken off candidate list

lobby to have s-c uses of chems exempted from the authorization process

lobby to have industry uses of chems authorized if above fails

Device Maker - Ideal REACh Position

- **Downstream User of Chemicals – Not an Importer or Chemical Mfg**
  - Suppliers/manufactures have the data, knowledge and experience to register the chemicals
    - Priority 1 – Ask non-EU suppliers to establish an "Only Representative" and to register
  - Formally request supplier to register your use
  - Implement risk management measures on Safety Data Sheet
- **Manufacturer of Articles**
  - Registration of substances in Articles – NOT REQUIRED
    - No substances are "intentionally released" under normal conditions of use
  - Notification of (SVHC) substances in Articles – NOT REQUIRED
    - Can exclude exposure to humans and environment during normal or reasonable foreseeable conditions of use including disposal
  - Communication – BEING EVALUATED
    - If article contains substance on candidate list >0.1%
      - Proactive – Supply recipient identity and safe use info
      - Upon request - Send identity & safe us info to consumer if 45 days

How do you determine if your article contains a substance on the candidate list?

Main Challenges

- Addressing customer requests for full product content disclosure
- Ensuring all substances are pre-registered without any access to the list
- Understanding and ensuring how IP is protected
- Determining if and where potential candidates are used and if they wind up in the products
- How do we track and store and report all of this data
- Come up with industry use descriptors and exposure scenarios

Things to think about!!!!!!

- Pre-registration – the portal to business continuity?
  - Very short period in which to commit
  - Do you pre-register –"just in case"
- A product is not a substance – Most companies and inventory systems deal in products
- Products generally contain substances
  - Products need to be translated to substances
- Who will register your substance use?
- How do you determine if your "article" contains an SVHC and in what quantity
- Have you hired an Only Representative – have you notified your customer?
- What are your IT solutions to manage data?

NEXT STEPS

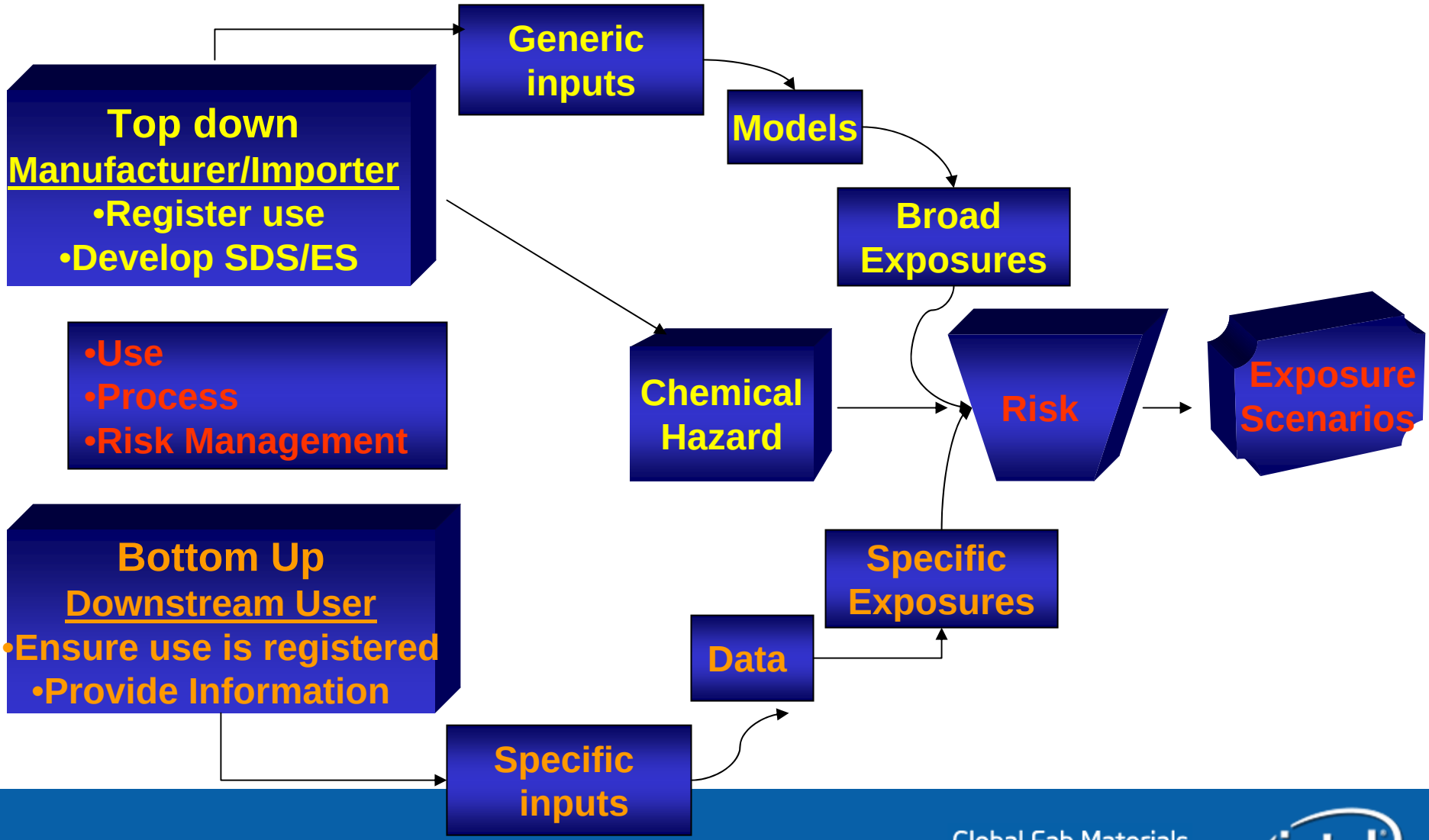
- Verify Pre-registration with supply chain over next few months
- Engage with ISMI & SEMI Work Groups to determine industry use categories & continue development of “industry” exposure scenarios
- Working with Industry groups to come up with an acceptable standard material declaration
- Continue to monitor candidate list and proposals to authorization list
- Continue to monitor guidance and REACH in general as it gets put into practice

THANK YOU!!

QUESTIONS?

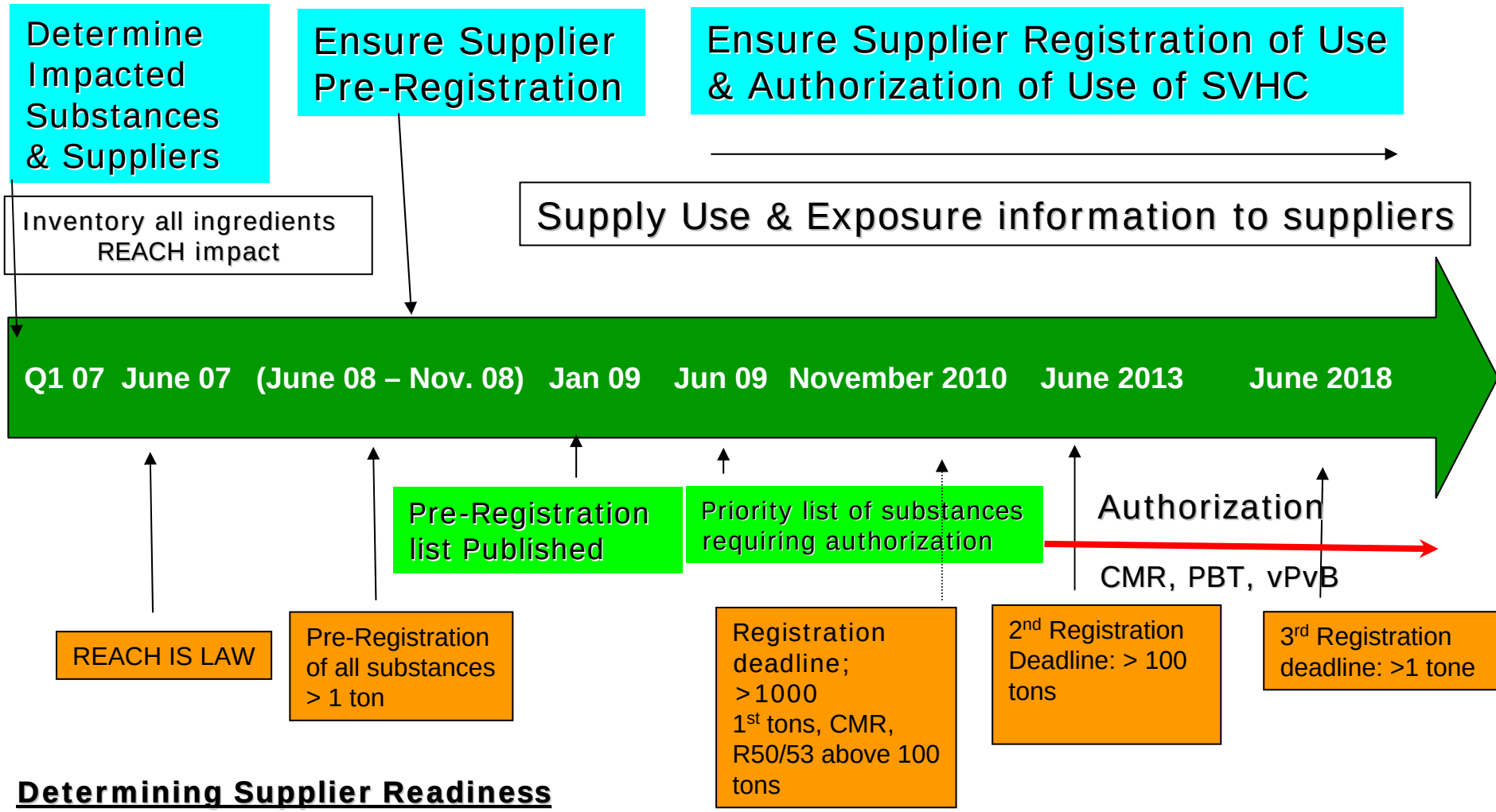
BACK-UP

REACH Supply Chain Communication
(Building exposure scenarios… From ISMI presentation)



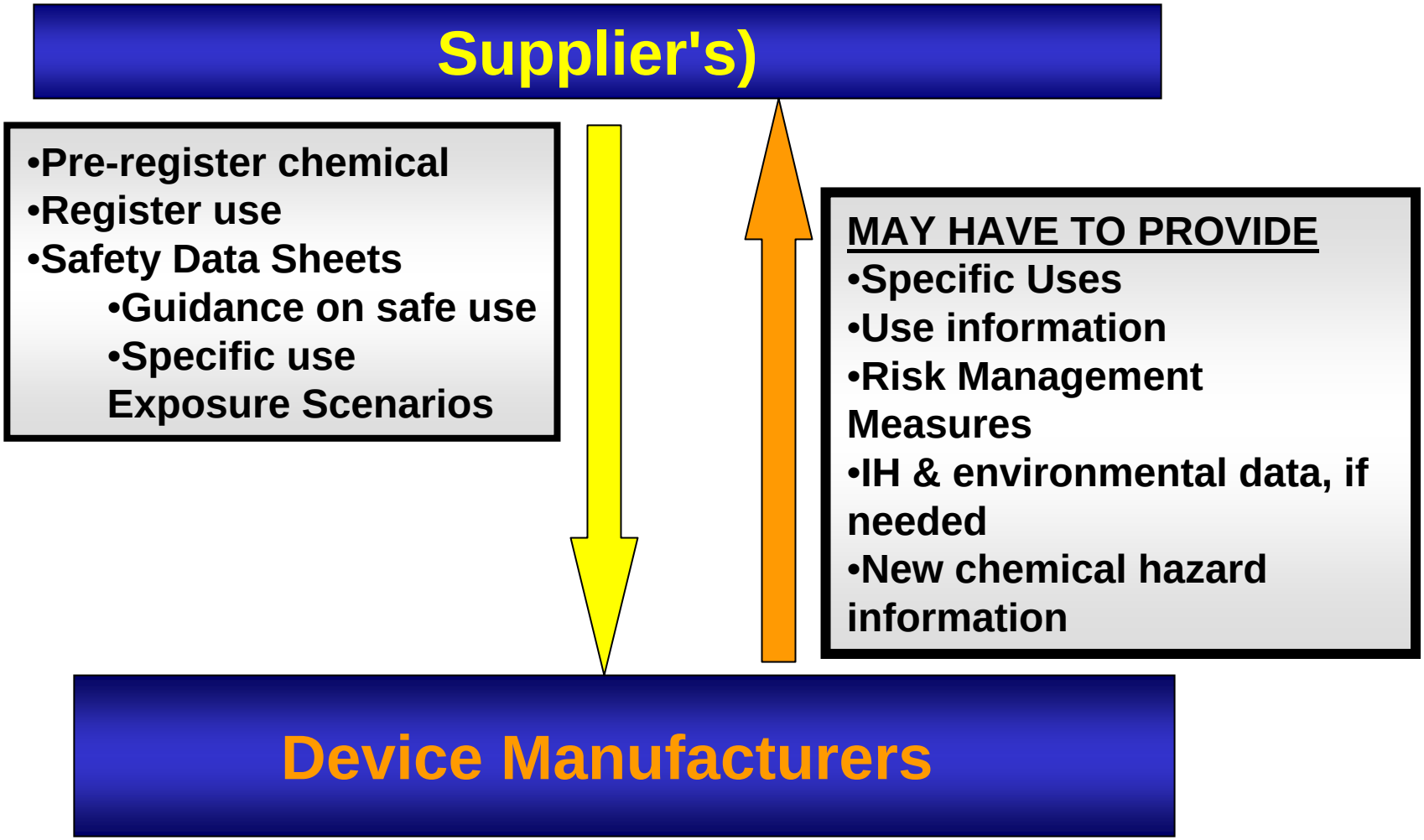
REACH Timeline of Key Events

Getting Intel Ready for REACH



Determining Supplier Readiness

NEW THING – Mandatory Communication along the Supply Chain



Substance identification			Authority	Reason for proposing	Date of publication	Deadline for commenting
Substance name	CAS number	EC number				
Anthracene	120-12-7	204-371-1	Germany	PBT	30/06/08	14/08/08
4,4'- Diaminodiphenylmethane	101-77-9	202-974-4	Germany	CMR	30/06/08	14/08/08
Dibutyl phthalate	84-74-2	201-557-4	Austria	CMR	30/06/08	14/08/08
Cyclododecane	294-62-2	206-33-9	France	PBT	30/06/08	14/08/08
Cobalt dichloride	7546-79-9	231-589-4	France	CMR	30/06/08	14/08/08
Diarsenic pentaoxide	1303-28-2	215-116-9	France	CMR	30/06/08	14/08/08
Diarsenic trioxide	1327-53-3	215-481-4	France	CMR	30/06/08	14/08/08
Sodium dichromate, dihydrate	7789-12-0		France	CMR	30/06/08	14/08/08
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4	Netherlands	vPvB	30/06/08	14/08/08
Bis (2-ethyl(hexyl)phthalate) (DEHP)	117-81-7	204-211-0	Sweden	CMR	30/06/08	14/08/08
Hexabromocyclododecane (HBCDD)	25637-99-4	247-148-4	Sweden	PBT	30/06/08	14/08/08
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	287-476-5	United Kingdom	PBT	30/06/08	14/08/08
Bis(tributyltin)oxide	56-35-9	200-268-0	Norway	PBT	30/06/08	14/08/08
Lead hydrogen arsenate	7784-40-9	232-064-2	Norway	CMR	30/06/08	14/08/08
Triethyl arsenate	15606-95-8	427-700-2	Norway	CMR	30/06/08	14/08/08
Benzyl butyl phthalate	85-68-7	201-622-7	Austria	CMR	30/06/08	14/08/08