



EUROPEAN COMMISSION  
DIRECTORATE-GENERAL JRC  
JOINT RESEARCH CENTRE  
Institute for Prospective Technological Studies (Seville)  
Sustainable Production and Consumption

# **1<sup>st</sup> Meeting of the AHWG for the Revision of the Commission Decision establishing the Ecological Criteria for the Award of the Community Ecolabel for Bed Mattresses**

**23 February 2012 (9:30 – 17:45)**

**Institute for Prospective Technological Studies (IPTS), Edificio Expo  
Room A30 (1<sup>st</sup> Floor)**

**Calle Inca Garcilaso, 3 - 41092 Seville, SPAIN**

## **Draft Agenda**

|           |   |                      |
|-----------|---|----------------------|
| <b>1.</b> | Opening and welcome   | <b>09:30 – 09:45</b> |
| <b>2.</b> | Political objectives of the EU Ecolabel and of Green Public Procurement   | <b>09:45 – 10:00</b> |
| <b>3.</b> | Preliminary background, scope definition and identification of criteria areas of discussion – presentation and discussion   | <b>10:00 – 11:00</b> |
|           | Coffee break  | <b>11:10 – 11:15</b> |
| <b>4.</b> | Discussion on criteria issues #1 - Environmental considerations on materials<br>1a. Energy and Life Cycle Assessment considerations<br>1b. Certification of wood<br>1c. Use of blowing agents for foam production<br>1d. Use of renewable-based materials for fillings<br>1e. Appropriate use of natural and synthetic latex<br>1f. Use of organic and conventionally produced materials<br>1g. Impact of end of life and waste treatment | <b>11:15 – 13:00</b> |
|           | Lunch break   | <b>13:00 – 14:00</b> |
| <b>5.</b> | Discussion on criteria issues #2 - Limitation in the use of hazardous materials<br>2a. Horizontal approach on hazardous chemicals of concern<br>2b. Use of flame retardants<br>2c. Use of biocides<br>2d. Use of phthalates   | <b>14:00 – 16:30</b> |
|           | Coffee break  | <b>16:30 – 16:45</b> |
| <b>6.</b> | Discussion on criteria issues #3 - Other issues<br>3a. Increasing the consumer awareness on the EU Ecolabel<br>3b. EMS / CSR criteria<br>3c. Alignment with the EU Ecolabel criteria for textiles<br>3d. Simplification and consistency of the criteria   | <b>16:45 – 17:30</b> |
| <b>7.</b> | Conclusions and closure of the workshop   | <b>17:30 – 17:45</b> |



# Revision of European Ecolabel Criteria for Bed Mattresses

## Overview of the presentation

1<sup>st</sup> Ad-hoc Working Group Meeting  
23<sup>rd</sup> February 2012, Seville

Joint Research Centre, Institute for Prospective Technological Studies



## Content

1. Preliminary background and scope definition
2. Identification of criteria areas of discussion
3. Discussion on criteria issues:
  - a. Environmental considerations on materials, product and final disposal
  - b. limitation in the use of hazardous materials
  - c. other issues



# Revision of European Ecolabel Criteria for Bed Mattresses

## Session 1: Preliminary background and scope definition

1<sup>st</sup> Ad-hoc Working Group Meeting  
23<sup>rd</sup> February 2012, Seville

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## Content

Composition of a typical bed mattress  
Definition of the product group  
Categorization of the product group  
Market analysis  
Conclusion and discussion



## Composition of a typical bed mattress

1. **Core:** it provides support and its composition is generally used to classify mattresses (e.g. latex foam, PUR foam, springs or wool/coconut fibres in baby mattresses).

2. **Shell** (or padding/wadding): it is a layer around the core used to refine the overall properties of the mattress (e.g. equalizing weight distribution, allowing better air flow or protecting the core). The materials mainly used include: PUR foam, latex foam, horse or camel hair, coconut fibres, polyester, cotton, wool, flax, hemp, felt, jute and sisal. These materials are held together by glue or sewing

3. **Tick** (or ticking): it is the outer cover of the mattress and provides a comfortable and protective top layer. Common materials used for the tick include: cotton, polyester, silk, wool and viscose. The tick can be fixed to the mattress or removable.

**Wooden bed bases (Scandinavian bed Mattresses):** Hybrid bed systems consisting of a wooden frame with integrated springs, with mattress fixed on top of this (normally with a sprung core). This unit is covered with a thin replaceable mattress pad.

**Spring mattresses:** Upholstered bed base consisting of springs, topped with fillings, as well as mattresses fitted with removable and/or washable covers



## Definition of the product group

Decision 2009/598/EC of 9 July 2009

The product group 'bed mattresses' shall comprise:

1. **Bed mattresses**, which are defined as **products that provide a surface to sleep or rest upon for indoor use**. The products consist of a cloth cover that is filled with materials, and that can be placed on an existing supporting bed structure;

2. The materials filling the bed mattresses, which may include: **latex foam, polyurethane foam and springs;**

3. **Wooden bed bases** that support the bed mattresses.

4. The product group shall include **spring mattresses**, which are defined as an upholstered bed base consisting of springs, topped with fillings, as well as mattresses fitted with removable and/or washable covers.

The product group **shall not comprise** inflatable mattresses and water mattresses, as well as mattresses classified under Council Directive 93/42/EEC (medical devices).



## Categorization of the product group

General agreement with PRODCOM and Combined Nomenclature classification

| Database | Codes    | Description   | Abbreviation Used in this presentation |
|----------|----------|---|--|
| PRODCOM  | 31031100 | Mattress supports (including wooden or metal frames fitted with springs or steel wire mesh, upholstered mattress bases, with wooden slats, divans)                  | Supports                               |
| CN       | 94041000 | Mattress supports for bed frames (excl. spring interiors for seats)   |  |
| PRODCOM  | 31031230 | Mattresses of cellular rubber (including with a metal frame; excluding water-mattresses, pneumatic mattresses)  | Latex                                  |
| CN       | 94042110 | Mattresses of cellular rubber   |  |
| PRODCOM  | 31031250 | Mattresses of cellular plastics (including with a metal frame; excluding water-mattresses, pneumatic mattresses)  | PUR                                    |
| CN       | 94042190 | Mattresses of cellular plastics   |  |
| PRODCOM  | 31031270 | Mattresses with spring interiors (excluding of cellular rubber or plastics)   | Spring                                 |
| CN       | 94042910 | Mattresses with spring interiors  |  |
| PRODCOM  | 31031290 | Other mattresses (excluding with spring interiors, of cellular rubber or plastics)  | Other                                  |
| CN       | 94042990 | Mattresses, stuffed or internally filled with any material (excl. cellular rubber or plastics, with spring interior, and pneumatic or water mattresses and pillows) |  |



## Market analysis 1

### Production:

**48 millions of bed mattresses** sold in 2010 the EU-27 (67 million units including mattress supports).

The total value of the mattresses produced was **EUR 3.8 billion** (EUR 5 billion including mattress supports).

The mattress market in Europe is fragmented. Few large global manufacturers in addition to a **wider number of smaller more nationally-focused players**.

**An overall decrease in the volume of mattresses sold** across the EU-27 is expected. Nevertheless, value appeared to remain relatively steady between 2005-2010.

| Mattress type | Sold Volume | Market Value | Key player               |
|---------------|-------------|--------------|--------------------------|
| Spring        | 37 %        | 45 %         | UK, Germany              |
| PUR           | 32 %        | 31 %         | German, Poland, France   |
| Latex         | 13 %        | 13 %         | Italy, France and Poland |
| Other         | 18 %        | 11 %         | Italy, France and Poland |

Source: own elaboration from Eurostat-PRODCOM data for 2010



## Market analysis 2

### Trade:

Total **imports** of bed mattresses across the EU-27 amounted to **EUR 1 billion** (EUR 1.4 billion with mattress supports) and **exports** to **EUR 1.3 billion** (EUR 1.6 billion with mattress supports).

In terms of trade, bed mattresses are a product which appears principally traded between **neighbour countries**.

**Trade with extra-EU countries** is approximately **one tenth** of the **overall trade**. Import/export figures are significantly higher for **PUR mattresses** than for other mattress types.

### Public procurement:

The mattress market is predominantly focused around production for domestic use.

Mattresses for institutional use often have **extra requirements** and are sold through **different supply chains**.

52 million units of bed mattresses sold in 2008 in the EU-27 (73 million units including mattress supports). An estimated **9%** of this (6% including mattress supports) attributed to public procurement.

Demand: **hospitals, care and residential facilities** >> prisons and army.



## Market analysis 3

### Green market and EU Ecolabel

Recent trend towards high-end, 'green' mattress products.

| Ecolabel name     | Region      | Product group | Date of adoption of the latest version | Known licences/ companies awarded* |
|-------------------|-------------|---------------|--|------------------------------------|
| EU Ecolabel       | EU          | Mattresses    | July 2009                              | 3                                  |
| Blue Angel        | Germany     | Mattresses    | April 2010                             | 4                                  |
| Austrian Ecolabel | Austria     | Mattresses    | Jan 2011                               | 4                                  |
| Nordic Swan       | Scandinavia | Furniture     | March 2011 (v. 4)                      | 5                                  |
| Green Mark        | Taiwan      | Mattresses    | September 2011 (v. 1.0.1)              | 14 (products)                      |

*Carpenter ApS – certified by Denmark*  
*Elite SA – certified by Austria*  
*Andre Renault – certified by France*

### limited uptake of the EU Ecolabel:

- lack of clarity in existing criteria
- difficulties in meeting existing criteria
- cost and uncertainty in applying
- lack of purchaser awareness/demand

| Product group  | Nr. of products licensed with the EU Ecolabel according to the Ecolabel workplan 2011-2015 | EU Ecolabel licenses / EUR billion of apparent consumption |
|----------------|--|--|
| Bed Mattresses | 133 (25 from own estimation)   | 38 (7.14)  |
| Textiles       | 4665   | 37.62  |



## Conclusion and discussion

The **existing scope** of the EU Ecolabel for bed mattresses seems **appropriated**, however...

1. Is the definition provided for **“upholstered bed bases”** appropriate or some clarifications / further technical elements should be provided? (necessary to state explicitly if the integrated frame can be designed for free standing or for being placed on a bed frame?)

2. Is the definition provided for **“wooden bed bases”** appropriate or some clarifications / further technical elements should be provided? (necessary to state this product is also known as “Scandinavian bed mattresses”, or refer to technical standards?)

3. Are all the mattress components to be included explicitly within the **definition provided?** (wording of article 1b could be changed to “the materials filling and covering the bed mattresses, which may include: latex foam, polyurethane foam, springs and textiles)

Any **other indications?**



## Conclusion and discussion

**Information of potential interest within the market analysis:**

1. Information on **Scandinavian bed mattress supports** and their market.

2. **Market segmentation** of the bed mattresses market with reference to technical aspects (e.g. sub-categories of mattresses available in the market, mattress composition and origin of materials, manufacturing processes and technologies used)

3. Statistical data related to the **penetration of EU Ecolabel** and other environmental labelling schemes (e.g. number of license-holders, number of product, market volumes)



# Revision of European Ecolabel Criteria for Bed Mattresses

## Session 2: Identification of criteria areas of discussion

1<sup>st</sup> Ad-hoc Working Group Meeting  
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## Content

Approach description

LCA - Sources of information considered

#1: LCA study from Boura (Greece)

#2: LCA study from Climact (Belgium)

#3: LCA study from ADEME (France)

#4: Carbon footprint study from FIRA (UK)

LCA summary and identification of key environmental issues

Bill of Materials

Stakeholders questionnaire

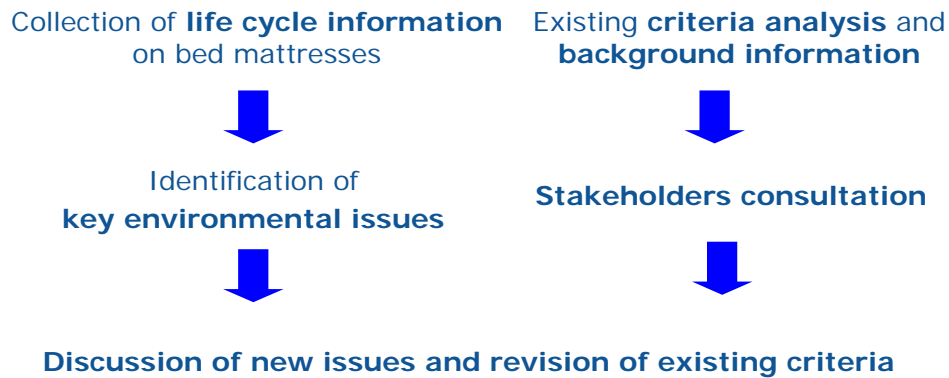
Issues proposed for discussion

Outlook on existing criteria





## Approach description



## LCA – Sources of information considered

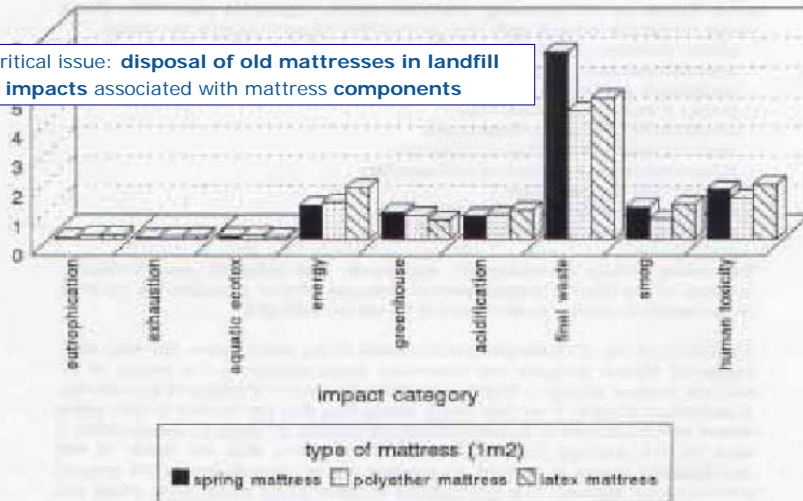
| Name of the study, author(s) and year  | Scope, Functional unit, System boundaries  | Environmental parameters considered                 |
|--|--|---|
| <b>A.D. Boura (HELCANET, Greece), 2004</b><br>"EU Eco label for Bed Mattresses. The Greek LCA study - Establishment of ecological criteria"  | 4 types of mattresses (PUR foam, latex foam, spring interior and Scandinavian mattress)<br>1m <sup>2</sup> of mattress, fit for use<br>Cradle-to-grave   | 12 impact categories – normalized scores            |
| <b>Climact, Vito and Belgian Department for Health, Food Chain Safety and Environment, 2011</b> "Mattresses LCA – Final Presentation"  | 9 mattress value chains representative for 4 different mattress types.<br>1 adult mattress (2m x 0.9m)<br>Cradle-to-use  | ReCiPe's 18 midpoint indicators - Normalized scores |
| <b>FIRA (UK), 2011</b> "Furniture Carbon Footprinting"   | 19 double mattresses, including spring and foam mattresses<br>A double mattress<br>Cradle to gate  | Greenhouse gases emissions                          |
| <b>Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME), 2010</b> "Rapport de synthèse PROPILAE (PROjet PILote pour l'Affichage Environnemental) des produits d'ameublement" | 1 PUR mattress (12 years); 2 spring mattresses (16 and 12 years, respectively);<br>1 latex mattress (more uncertain information).<br>1 single mattress used for 1 year<br>Cradle to grave (impacts from transports not fully taken into account) | 15 impact categories – normalized scores            |



## #1: LCA study from Boura (Greece)

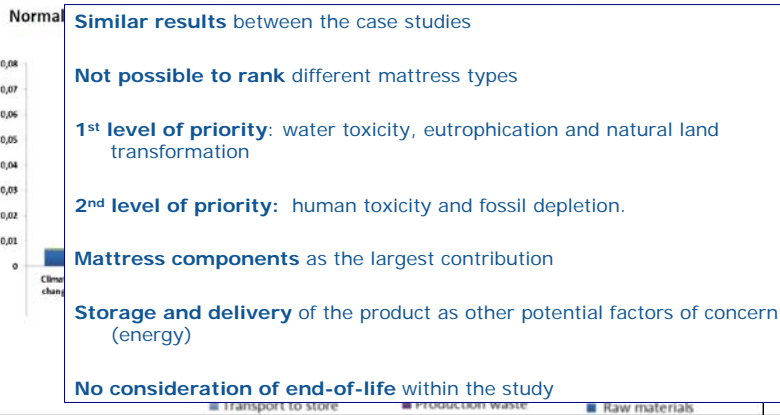
normalised score (days of inhabitants equivalents)

Most critical issue: **disposal of old mattresses in landfill**  
Other impacts associated with mattress components



## #2: LCA study from Climact, Vito and Belgian Ministry for Environment

### Results and discussion



Similar results between the case studies

Not possible to rank different mattress types

1<sup>st</sup> level of priority: water toxicity, eutrophication and natural land transformation

2<sup>nd</sup> level of priority: human toxicity and fossil depletion.

Mattress components as the largest contribution

Storage and delivery of the product as other potential factors of concern (energy)

No consideration of end-of-life within the study



### #3: LCA study from ADEME (France)

#### Results and discussion

Similar results between the case studies

Not possible to rank different mattress types

Priority: non-hazardous waste, energy, resource depletion, GHGs, acidification

Mattress components as the largest contribution

No consideration of product transport and sale

Non- Hazardous Waste GHG Emissions Acidification

Eutrophication Aquatic Toxicity Human Toxicity Non-Hazardous Waste

### #4: LCA study from FIRA (UK)

#### Results and discussion

| GHG Emissions (kgCO <sub>2</sub> eq) | Contribution to total GHG emissions (%) |                  |          |       |         |           |           |           |       |   |
|--------------------------------------|---|------------------|----------|-------|---------|-----------|-----------|-----------|-------|---|
|                                      | Timber & Board                          | Foams & fillings | Textiles | Metal | Plastic | Packaging | Transport | Utilities | Other |   |
| min                                  | 43                                      | 0                | 3        | 1     | 0       | 0         | 1         | 1         | 1     | 0 |
| max                                  | 164                                     | 0                | 82       | 36    | 54      | 6         | 7         | 3         | 24    | 1 |
| Avg.                                 | 80                                      | 0                | 44       | 14    | 29      | 1         | 3         | 2         | 7     | 0 |

Only GHGs

Mattress components = main contribution



## LCA summary and identification of key environmental issues

An **environmental ranking** among the different mattress types **cannot be drawn**.

The identification of environmental areas of **prioritization** is **fuzzy**

Parameters included also within the **Norwegian EPD guidelines**.

**Reporting of GHG emissions** (i.e. the "carbon footprint") is more common than reporting other environmental measures.

| Issue                          | Boura | ADEME | Climact et al. |
|--------------------------------|-------|-------|----------------|
| 1. Acidification               | X     | X     |                |
| 2. Energy use                  | X     | X     | X              |
| 3. Eutrophication              |       |       | X              |
| 4. GHG emissions               | X     | X     |                |
| 5. Human toxicity              | X     |       | X              |
| 6. Natural land Transformation |       |       | X              |
| 7. Smog                        | X     |       |                |
| 8. Water toxicity              |       |       | X              |
| (end of life)                  | X     |       |                |



## LCA summary and identification of key environmental issues

Most **critical aspects** associated with the lifecycle of a mattress:

1. Sourcing, production and use of **components (\*)**
2. **disposal** of the product itself in landfill
3. energy issues associated with the **storage and delivery** of the product

**Not yet included** within the existing EU Ecolabel criteria

**(\*) further analysis?**



## Bill of Materials

| Component         | Simmons (1) |    | Onrev (2)   |    | Simam (3)   |    | I.M.A. Flex (4) |    | Morfeus (5)  |    | Bultex (6)  |    |
|-------------------|-------------|----|-------------|----|-------------|----|-----------------|----|--------------|----|-------------|----|
|                   | Weight (kg) | %  | Weight (kg) | %  | Weight (kg) | %  | Weight (kg)     | %  | Weight (kg)  | %  | Weight (kg) | %  |
| Viscose           | 0           | 0  | 0           | 0  | 0.0         | 0  | 0.0             | 0  | 0.0          | 0  | 0.7         | 4  |
| Polypropelene     | 2.8         | 10 | 1.6         | 5  | 0.0         | 0  | 0.0             | 0  | 0.0          | 0  | 0.1         | 1  |
| Steel             | 19.5        | 67 | 13          | 42 | 6.8         | 77 | 9.0             | 63 | 7.3          | 71 | 0.0         | 0  |
| Wool              | 0.3         | 1  | 0.7         | 2  | 1.0         | 11 | 0.0             | 0  | 0.0          | 0  | 0.0         | 0  |
| Cotton            | 0.3         | 1  | 9.2         | 30 | 1.0         | 11 | 0.0             | 0  | 0.0          | 0  | 0.0         | 0  |
| Polyamide         | 0           | 0  | 0           | 0  | 0.0         | 0  | 0.0             | 0  | 0.0          | 0  | 0.0         | 0  |
| Polyester         | 2.1         | 7  | 2.4         | 8  | 0.0         | 0  | 0.0             | 0  | 0.0          | 0  | 1.0         | 6  |
| Polyurethane      | 4.2         | 14 | 2.5         | 8  | 0.0         | 0  | 3.8             | 27 | 1.9          | 19 | 13.2        | 79 |
| Polyester padding | 0           | 0  | 1.5         | 5  | 0.0         | 0  | 1.4             | 10 | 1.1          | 11 | 1.6         | 10 |
| Polyether         | 0           | 0  | 0           | 0  | 0.0         | 0  | 0.0             | 0  | 0.0          | 0  | 0.2         | 1  |
| <b>Total</b>      | <b>29.2</b> |    | <b>30.9</b> |    | <b>8.80</b> |    | <b>14.20</b>    |    | <b>10.26</b> |    | <b>16.7</b> |    |

+ Latex and wood



## Stakeholders consultation

| #  | Issue  |
|----|--|
| 1  | Definition of bed mattress product group                               |
| 2  | Criterion number: 5.1 - Certification of wood                          |
| 3  | Criterion number: 9 - Flame retardants                                 |
| 4  | Criterion numbers: 6.1 & 10 - Biocides                                 |
| 5  | Criterion number: 2.7 - Emissions for foam production (blowing agents) |
| 6  | Impact of waste treatment  |
| 7  | Restricting the use of phthalates                                      |
| 8  | Energy requirements – Lifecycle analysis                               |
| 9  | Use of alternative materials based on renewable sources                |
| 10 | Appropriate use of 'natural' and 'synthetic' materials                 |
| 11 | Organic vs conventionally produced materials                           |
| 12 | Limiting the use of hazardous materials and substances                 |
| 13 | Low uptake of EU Ecolabel under existing criteria                      |
| 14 | Additional comments/feedback   |

Identification of issues for discussion



## Issues proposed for discussion (1/3)

### 1. Environmental considerations on materials, product and final disposal

- a. Energy and Life Cycle Assessment considerations (NEW!)
- b. Certification of wood (Revision)
- c. Use of blowing agents for foam production (Revision)
- d. Use of renewable-based materials for fillings (NEW!)
- e. Appropriate use of natural and synthetic latex (NEW!)
- f. Use of organic and conventionally produced materials (NEW!)
- g. Impact of end of life and waste treatment (NEW!)



## Issues proposed for discussion (2/3)

### 2. Limitation in the use of hazardous materials and substances

- a. Horizontal approach on hazardous chemicals of concern (NEW!)
- b. Use of flame retardants (Revision)
- c. Use of biocides (Revision)
- d. Use of phthalates (NEW!)



## Issues proposed for discussion (3/3)

### 3. Other issues

- a. Increasing the consumer awareness on the EU Ecolabel (NEW!)
- b. EMS / CSR criteria (NEW!)
- c. Alignment with the EU Ecolabel criteria for textiles (Revision)
- d. Simplification and consistency of the criteria (Revision)



## Outlook on existing criteria (1/3)

| Criteria area       | Issue  |
|---------------------|--|
| 1. Latex            | 1.1. Extractable heavy metals                                      |
|                     | 1.2. Formaldehyde  |
|                     | 1.3. Volatile organic compounds (VOCs)                             |
|                     | 1.4. Dyes, pigments, flame retardants and auxiliary chemicals      |
|                     | 1.5. Metal complex dyes  |
|                     | 1.6. Chlorophenols   |
|                     | 1.7. Butadiene   |
|                     | 1.8. Nitrosamines  |
| 2. PUR              | 2.1. Extractable heavy metals                                      |
|                     | 2.2. Formaldehyde  |
|                     | 2.3. Volatile organic compounds (VOCs)                             |
|                     | 2.4. Dyes, pigments, flame retardants and auxiliary chemicals      |
|                     | 2.5. Metal complex dyes  |
|                     | 2.6. Organic tin   |
|                     | 2.7. Blowing agents <b>1b</b>                                      |
| 3. Wire and springs | 3.1. Degreasing  |
|                     | 3.2. Galvanisation   |
| 4. Coconut fibres   | If rubberised, latex used must comply with criteria for latex foam |
| 5. Wooden material  | 5.1. Sustainable forest management <b>1c</b>                       |
|                     | 5.2. Formaldehyde emission from untreated raw wood-based materials |

**1e = use of natural and synthetic latex** →

**1d = renewable/fossil based materials** }

**2a = horizontal issue on hazardous substances** }

**1a = LCA considerations**



## Outlook on existing criteria (2/3)

| Criteria area                                   | Issue  |
|---|--|
| 6. Textiles (fibres and fabric)                 | 6.1. Biocides  |
|   | 6.2. Auxiliary chemicals   |
|   | 6.3. Detergent, fabric softeners and complexing agents               |
|   | 6.4. Bleaching agents  |
|   | 6.5. Impurities in dyes  |
|   | 6.6. Impurities in pigments  |
|   | 6.7. Chrome mordant dyeing   |
|   | 6.8. Metal complex dyes  |
|   | 6.9. Azo dyes  |
|   | 6.10. Dyes that are carcinogenic, mutagenic or toxic to reproduction |
|   | 6.11. Potentially sensitising dyes                                   |
|   | 6.12. Colour fastness to perspiration (acid, alkaline)               |
|   | 6.13. Colour fastness to web rubbing                                 |
|   | 6.14. Colour fastness to dry rubbing                                 |
| 7. Glues  |  |
| 8. VOC and SVOCs on the entire mattress         |  |
| 9. Flame retardants used in the entire mattress | 2b   |
| 10. Biocides in the final product               | 2c   |

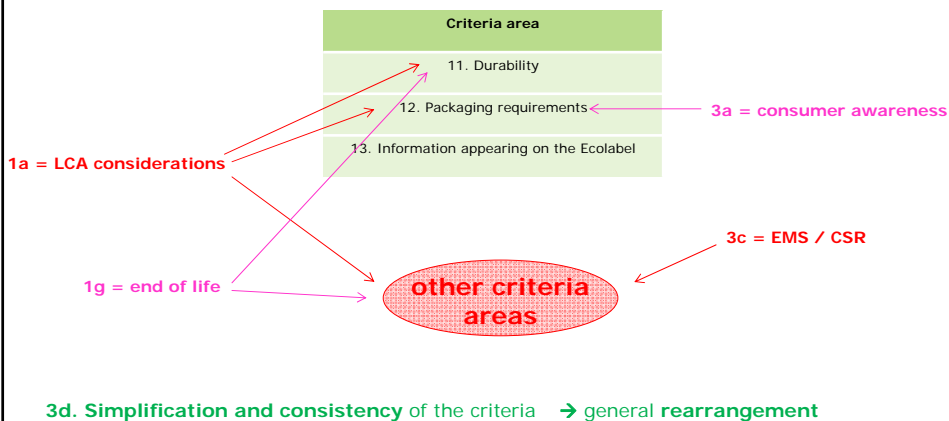
1a = LCA considerations  
1f = organic/conventional materials  
3c = alignment with textiles

2a = horizontal issue on hazardous substance

2d = phthalates



## Outlook on existing criteria (3/3)







# Revision of European Ecolabel Criteria for Bed Mattresses

## Session 3: Discussion on criteria issues

1<sup>st</sup> Ad-hoc Working Group Meeting  
23<sup>rd</sup> February 2012, Seville

Joint Research Centre, Institute for Prospective Technological Studies



## Content

### Criteria area 1. Environmental considerations on materials, product and final disposal

- a. Energy and Life Cycle Assessment considerations (NEW!)
- b. Certification of wood (Revision)
- c. Use of blowing agents for foam production (Revision)
- d. Use of renewable-based materials for fillings (NEW!)
- e. Appropriate use of natural and synthetic latex (NEW!)
- f. Use of organic and conventionally produced materials (NEW!)
- g. Impact of end of life and waste treatment (NEW!)

### Criteria area 2. Limitation in the use of hazardous materials and substances

- a. Horizontal approach on hazardous chemicals of concern (NEW!)
- b. Use of flame retardants (Revision)
- c. Use of biocides (Revision)
- d. Use of phthalates (NEW!)

### Criteria area 3. Other issues

- a. Increasing the consumer awareness on the EU Ecolabel (NEW!)
- b. EMS / CSR criteria (NEW!)
- c. Alignment with the EU Ecolabel criteria for textiles (Revision)
- d. Simplification and consistency of the criteria (Revision)



## Criteria area 1.

### Environmental considerations on materials, product and final disposal



### Issue 1a. Energy and Life Cycle Assessment considerations (NEW!)

**Impacts** are associated with the life cycle of a bed mattress

**Environmental areas** of potential concerns were identified in the technical analysis

These are primarily affected by:

| Issue                          | Boura | ADEME | Climact et al. |
|--------------------------------|-------|-------|----------------|
| 1. Acidification               | X     | X     |                |
| 2. Energy use                  | X     | X     | X              |
| 3. Eutrophication              |       |       | X              |
| 4. GHG emissions               | X     | X     |                |
| 5. Human toxicity              | X     |       | X              |
| 6. Natural land Transformation |       |       | X              |
| 7. Smog                        | X     |       |                |
| 8. Water toxicity              |       |       | X              |
| (end of life)                  | X     |       |                |

1. Sourcing, production and use of **components**
2. **Storage and delivery** of the product (energy)



Increasing the **environmental responsibility** of producers = added value

Possibilities of **benchmarking** depending on the availability of environmental **information** (limitation + further analysis needed)

Industry appears already experienced with **carbon footprinting** practices and standards exist (e.g. GHGs emissions)



**Different areas of intervention could be explored**

| Proposal for discussion   | Impact on existing criteria document      | Pros  | Cons   |
|---|---|---|--|
| A. <b>Setting thresholds</b> on specific environmental aspects related to materials   | New criteria in sections 1, 2, 3, 4, 5, 6 | Potential and direct <b>environmental benefits</b>  | <b>Identification</b> of the specific environmental aspects to rule<br><br><b>Benchmarking</b> could be limited by industry data availability. |
| B. Prescribing <b>EPDs for the materials procured</b> (e.g. carbon footprint)   | New criteria in sections 1, 2             | <b>Increasing the environmental</b>   | The achievement of <b>environmental benefits</b> is  |
| C. Applying <b>eco-design principles</b> to select more efficient materials and/or to save resources (e.g. limiting the amount of materials to be used) | New                                       | <b>Criterion 11: Durability</b><br>The lifetime of a household mattress is expected to be 10 years; this will vary depending on application.<br>Adult mattress – Loss of height <15%, loss of firmness <20%<br>Baby mattress – Loss of height <15%, loss of firmness <20% |  |
| D. Increasing the <b>durability and quality</b> of the product  | Criterion 11 to be revised                | Potential <b>indirect benefits</b>  | <b>whether and how</b> this is possible  |
| E. Promoting <b>best practices for delivery and storage</b> of mattresses   | New criterion                             | Potential <b>direct benefits</b>  | <b>whether and how</b> this is possible  |



## Issue 1b. Certification of wood (Revision)

### Existing criterion 5.1: Wood – Sustainable forest management

*All virgin solid wood should be from forests which are sustainably managed (i.e. sustainable forest management).*

***60% of virgin solid wood from forests with certified third party forest certification schemes.***

*Wood not certified must not originate from:*

- *disputed land rights or primary old growth forests*
- *illegal harvesting*
- *uncertified high conservation value forests.*

*Declarations must be produced to confirm origin.*



Issue relevant only for **Scandinavian bed mattresses**

Some EU Ecolabel product groups have adopted **stricter controls** on the certified sourcing of wood (e.g. 100% in the copying and graphic paper product group)

**It may be appropriate to increase the 60% level specified in the existing criteria.**

#### **Stakeholders:**

- mixed suggestions (60-100%)
- problem of traceability at production level
- better staying on criteria on legality?



## Any factor is actually limiting the sourcing of certified wood?

Timber trade federation

(<http://www.ttf.co.uk/Environment/Certification.aspx>)

- 15% of world wood-producing forests (by area) certified as FSC or PEFC

- Around 60% of timber producing forests are certified in these regions

→ **Access to certified wood** for producers of Scandinavian bed mattresses should **not** be a **significant issue**



From early 2013: product shall contain **NO illegally harvested wood**

→ incorporating a **stricter criterion** to raise the EU Ecolabel baseline

Based on the gathered information:

**the preliminary proposal is to set this threshold to 100%**

Link to the furniture product group (upcoming revision)???



## Issue 1c. Use of blowing agents for foam production (Revision)

### Existing criterion 2.7 (PUR): Blowing agents

*Halogenated organic compounds shall not be used as blowing, or auxiliary blowing agents.*

*Declaration of non-use in production processing required.*

**Two different foams** are used in mattresses – PUR and latex foams.

Is the existing **criterion** appropriate **for both PUR and latex foams?**



**PUR:** The present ban is not understood to be a hurdle as PUR is easily produced using other techniques not reliant on these gases.

**Latex:** The criterion is not needed for this type foam type

The recommendation is **to keep this criterion as it is**



## Issues 1d. Use of renewable-based materials for fillings (NEW!)

**Various options potentially available** for replacing commonly-used materials based on petro-chemicals with renewable-based alternatives

e.g.

vegetal oils for the production of PUR and latex foams  
wool and coconut fibres as layers of padding/wadding  
(Latex discusses later)

**Use of these materials could be promoted**



However:

1. **market availability** is unknown and apparently limited
2. Lack of general evidence about the **environmental benefits**:
  - trade-offs are apparent
  - impacts could differ case-by-case making difficult the criteria definition.
3. **new problems** such as the presence of allergens or the risk of compromising the performance of the product.

Encouraging the use of renewable-based materials (where appropriate) is an issue which could be **considered in the future**.

Could **sustainable sourcing of materials** be considered an issue to investigate further within this revision process?



## Issue 1e. Appropriate use of natural and synthetic latex (NEW!)

**Latex** can be:

- **natural** (when produced from the sap of the "rubber tree") or
- **synthetic** (when produced through chemical synthesis).

**Mixtures** chosen to provide the optimum **performance** and price of the mattress (5-100% is synthetic latex)

The two types of latex may **not be considered substitutable** as they bring different properties to the mattress.



Two processes for the production of **synthetic latex**:

- the **Dunlop process**
- the **Talalay process** (more energy intensive)

**Both** are **used** extensively in the production of the latex cores for mattresses as they impart **different properties** to the latex

The two processes **cannot be considered substitutable**

Could **sustainable sourcing of materials** be considered an issue to investigate further within this revision?





## Issue 1f. Use of organic and conventionally produced materials (NEW!)

Mattresses contain a variety of **naturally produced materials**

e.g. cotton, wool, natural latex, hemp, bamboo and coconut fibres

**Organically produced materials** may provide **suitable and environmentally beneficial alternatives** to certain conventionally produced (non-organic) materials in a mattress.



However:

1. there is often a **balance** between different positive and negative impact factors.
2. there is often a greater difference in impact arising from the **choice of material or production location** rather than whether it is organic or not
3. organic based criteria may create **confusion** as there are already several separate labelling schemes to certify organically produced goods.



Inclusion of specific criteria on organic production may be **premature** and it could be more important to speak of "sustainable" production.

The following options are discussed:

A. Business as usual scenario: **no specific requirements** for organic materials.

B. Textiles-approach: **the amount** of organic material to be sourced could be **specified for certain materials**

B1. For textiles → Link to the textile product group revision

B2. For latex?



## Issue 1g. Impact of end of life and waste treatment (NEW!)

In end of life, mattresses are typically sent to **landfill**.

Mattresses account for a **large proportion of the total waste** sent to landfill (10% by vol. according to one study in the South East of England)

This represents a large quantity of **material which is not recovered** and the **environmental area of priority** according to Boura's LCA.

The **EU Waste Framework Directive** highlights the need to alter disposal routes, favouring prevention of waste, reuse, recycling and energy recovery over sending to landfill



Up to **95% of the materials** in mattresses can be **recycled**.

**Various recycling schemes** have been identified, however, this practice does not appear to be widespread.

The recycling process for mattresses is not generally sophisticated, relying on **hand separation** of materials and focusing on the most valuable materials.

**Recycling of metals and wood** seems relatively simple.

It is technically possible to recover **other materials**, however this may be difficult in practice due to economics and contamination. **Energy recovery** might be more a reasonable option in this case.



**Processing end-of-life mattresses** is also often **complicated** by:

- the different compositions of mattresses
- hygiene and health issues after several years of use.
- logistics difficulties

Mattress disposal is an **issue of significant concern**...but generally **out of the direct control** of producers.

**Difficult** influencing these practices through the EU Ecolabel scheme...but **not impossible!**



| Proposal for discussion  | Potential impact on criteria | Applicability    | Effectiveness    |
|--|------------------------------|------------------|------------------|
| <b>A. Assigning a bonus</b> if old mattresses are given back to producer (as in Austrian Ecolabel)       | New Criterion                | Apparently easy  | Very good        |
| <b>B. Implementing eco-design principles</b> for more efficient use of resources and recycling after use | New Criterion                | To be understood | Very good        |
| <b>C. Increasing the durability and quality of</b> mattresses  | Criterion 11 to be revised   | To be understood | Potentially good |
| <b>D. Informing consumers</b> about the best practices for the final disposal of the mattress            | New Criterion                | Easy             | Limited          |
| <b>E. Listing the materials</b> used in the mattresses for the benefit of recyclers                      | New Criterion                | Easy             | Good             |
| <b>F. Promoting the use of recycled materials</b>  | New Criterion                | Difficult        | Limited          |

*(Note on point A: Austrian Ecolabel also requires a waste management system in the production site)*



## Criteria area 2.

### Limitation in the use of hazardous materials and substances



## Issue 2a. Horizontal approach on hazardous chemicals of concern (NEW!)

EU Ecolabel legislation (EC/66/2010) → restrictions on the use of hazardous materials and substances (Art. 6.6)

*The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency*

Hazardous materials and substances can be classified through hazard statements / risk phrases



Derogations of specific substances are allowable in exceptional circumstances where inclusion would prevent take up of the EU Ecolabel or shift the environmental burden to other life cycle phases or impacts (Art. 6.7 of the EU Ecolabel regulation).

*For specific categories of goods containing substances referred to in paragraph 6, and only in the event that it is not technically feasible to substitute them as such, or via the use of alternative materials or designs, or in the case of products which have a significantly higher overall environment performance compared with other goods of the same category, the Commission may adopt measures to grant derogations from paragraph 6. No derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) No 1907/2006 and that are identified according to the procedure described in Article 59(1) of that Regulation, present in mixtures, in an article or in any homogeneous part of a complex article in concentrations higher than 0,1 % (weight by weight). Those measures, designed to amend non-essential elements of this Regulation, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 16(2).*



**New approach proposed:**

1. Horizontal ban based on H-statements / R-phrases
2. Derogation request

**Criterion x.1 - Hazardous substances and mixtures**

According to the Article 6(6) of the Regulation No 66/2010 on EU Ecolabel, **the product or any part of it** thereof shall **not contain substances or mixtures** meeting the criteria for classification with the **hazard classes or categories** specified below nor shall it contain substances referred to in **Article 57 of REACH Regulation (EC) No 1907/2006**.

| Hazard statement  | Associated risk phrase(s) |
|---|---------------------------|
| H300 Fatal if swallowed   | R28                       |
| H301 Toxic if swallowed   | R25                       |
| H304 May be fatal if swallowed and enters airways                               | R65                       |
| H310 Fatal in contact with skin   | R27                       |
| H311 Toxic in contact with skin   | R24                       |
| H330 Fatal if inhaled   | R23; R26                  |
| H331 Toxic if inhaled   | R23                       |
| H340 May cause genetic defects  | R46                       |
| H341 Suspected of causing genetic defects                                       | R68                       |
| H350 May cause cancer   | R45                       |
| H350i May cause cancer by inhalation  | R49                       |
| H351 Suspected of causing cancer  | R40                       |
| H360F May damage fertility  | R60                       |
| H360D May damage the unborn child   | R61                       |
| H360FD May damage fertility. May damage the unborn child                        | R60/61/60-61              |
| H360Fd May damage fertility. Suspected of damaging the unborn child             | R60/63                    |
| H360Df May damage the unborn child. Suspected of damaging fertility             | R61/62                    |
| H361f Suspected of damaging fertility   | R62                       |
| H361d Suspected of damaging the unborn child                                    | R63                       |
| H361fd Suspected of damaging fertility. Suspected of damaging the unborn child. | R62-63                    |
| H362 May cause harm to breast-fed children                                      | R64                       |
| H370 Causes damage to organs  | R39/23/24/25/26/27/28     |
| H371 May cause damage to organs   | R68/20/21/22              |
| H372 Causes damage to organs through prolonged or repeated exposure             | R48/25/24/23              |
| H373 May cause damage to organs through prolonged or repeated exposure          | R48/20/21/22              |
| H400 Very toxic to aquatic life   | R50/50-53                 |
| H410 Very toxic to aquatic life with long-lasting effects                       | R50-53                    |
| H411 Toxic to aquatic life with long-lasting effects                            | R51-53                    |
| H412 Harmful to aquatic life with long-lasting effects                          | R52-53                    |
| H413 May cause long-lasting harmful effects to aquatic life                     | R53                       |
| EUH059 Hazardous to the ozone layer   | R59                       |
| EUH029 Contact with water liberates toxic gas                                   | R29                       |
| EUH031 Contact with acids liberates toxic gas                                   | R31                       |
| EUH032 Contact with acids liberates very toxic gas                              | R32                       |
| EUH070 Toxic by eye contact   | R39-41                    |
| H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled | R42                       |
| H317: May cause allergic skin reaction  | R43                       |



The use of substances or mixtures which **upon processing** change their properties (e.g. become no longer bioavailable, undergo chemical modification) in a way that the **identified hazard no longer applies** are **exempted** from the above requirement.

Concentration limits for substances or mixtures meeting the criteria for classification with the above mentioned hazard classes or categories, and for substances meeting the criteria of Article 57 (a), (b) or (c) of REACH, shall not exceed the **generic or specific concentration limits** determined in accordance with the Article 10 of CLP Regulation No1272/2008. If specific concentration limits are determined they should prevail against the generic ones.

Concentration limits for substances meeting criteria of **Article 57** (d), (e) or (f) of Regulation (EC) No 1907/2006 shall not exceed **0.1% weight by weight**.



Assessment and verification:

**Concentration limits shall be specified in the Safety Data Sheets** according to Article 31 of REACH Regulation 1907/2006.

**In case of mixtures:**

The applicant shall provide a **declaration of compliance** with this criterion, together with a **list of ingredients and related Safety Data Sheets** according to Annex II of the REACH regulation (EC) No 1907/2006 for the product as well as for all substances or mixtures listed in the formulation(s).

**In case of articles:**

The applicant shall provide a **declaration of compliance** with this criterion, together with related documentation, such as **declarations of compliance signed by the material suppliers** and copies of relevant **Safety Data Sheets for substances or mixtures**.



The following **substances/uses** of substances are specifically **derogated** from this requirement.

### Preliminary list of substances and materials under investigation

| Substance                | Use                                    | Relevant hazard statements/<br>risk phrase(s) *   | Received Comments / discussion points<br>(no official proposal)   |
|--------------------------|--|---|---|
| <b>Antimony trioxide</b> | Flame retardant (synergist)            | H351 – Suspected of causing cancer  | <b>Robust information is needed</b> to demonstrate that:<br>1. the use is significantly widespread<br>2. safer and more environmentally friendly options are not technically possible |
| <b>Boric acid</b>        | Flame retardant                        | H360D – May impair fertility, may damage unborn child   | Boric acid is on the SVHC candidate list and therefore <b>cannot be derogated</b>   |
| <b>Natural rubber</b>    | Common filling                         | H317 – May cause allergic skin reaction   | Does not come into contact with skin.<br><b>Derogation?</b>   |
| <b>Nickel</b>            | Springs can be made of stainless steel | H351 - Limited evidence of a carcinogenic effect<br>H317 - May cause sensitization by skin contact<br>H372 - Toxic: danger of serious damage to health by prolonged exposure through inhalation | Use of Nickel in stainless steel.<br><b>Derogation?</b>   |



Request for **derogation** should come with **quantitative information** providing solid evidence that **alternatives do not exist** that at the same time:

1. are **safer** with respect to the inherent hazards properties of chemicals
2. ensure an **adequate level of protection** of human health and the environment
3. are **present** in a sufficient number of products





***Criterion x.2 - Substances listed in accordance with article 59(10) of REACH***

According to Article 6(7) of Regulation No 66/2010 on the EU Ecolabel, **no derogation** from the exclusion in Article 6(6) shall be given concerning substances identified as **substances of very high concern and included in the list** foreseen in Article 59 of REACH, present in mixtures, in an article or in any homogenous part of a complex article in **concentrations higher than 0.1%. Specific concentration limits** determined in accordance with Article 10 of CLP Regulation No1272/2008 shall apply in case it is lower than 0.1%.



***Assessment and verification:***

The **list of substances identified as substances of very high concern** and included in the candidate list in accordance with Article 59 of REACH can be found here:

[http://echa.europa.eu/chem\\_data/authorisation\\_process/candidate\\_list\\_table\\_en.asp](http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp)

Reference to the list shall be made on the date of application.

**Concentration limits shall be specified** in the Safety Data Sheets according to Article 31 of REACH Regulation 1907/2006.



## Specific points for discussion (1/4)

### 1. Approach: horizontal ban → derogation

Do stakeholders agree with this approach?  
 What is the expected impact for applicants?  
 How these criteria could be improved?

### 2. List of H-statements / R-phrases

Is the presented list appropriate for this product group?  
 Should some phrases be added/removed?  
 What database(s) should we refer on?

<http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory>

| Hazard statement  | Associated risk phrase(s) |
|---|---------------------------|
| H300 Fatal if swallowed   | R28                       |
| H301 Toxic if swallowed   | R25                       |
| H304 May be fatal if swallowed and enters airways                               | R65                       |
| H310 Fatal in contact with skin   | R27                       |
| H311 Toxic in contact with skin   | R24                       |
| H330 Fatal if inhaled   | R23; R26                  |
| H331 Toxic if inhaled   | R23                       |
| H340 May cause genetic defects  | R46                       |
| H341 Suspected of causing genetic defects                                       | R68                       |
| H350 May cause cancer   | R45                       |
| H350i May cause cancer by inhalation  | R49                       |
| H351 Suspected of causing cancer  | R40                       |
| H360F May damage fertility  | R60                       |
| H360D May damage the unborn child   | R61                       |
| H360FD May damage fertility. May damage the unborn child                        | R60/61/60-61              |
| H360Fd May damage fertility. Suspected of damaging the unborn child             | R60/63                    |
| H360Df May damage the unborn child. Suspected of damaging fertility             | R61/62                    |
| H361f Suspected of damaging fertility   | R62                       |
| H361d Suspected of damaging the unborn child                                    | R63                       |
| H361fd Suspected of damaging fertility. Suspected of damaging the unborn child. | R62-63                    |
| H362 May cause harm to breast-fed children                                      | R64                       |
| H370 Causes damage to organs  | R39/23/24/25/26/27/28     |
| H371 May cause damage to organs   | R68/20/21/22              |
| H372 Causes damage to organs through prolonged or repeated exposure             | R48/25/24/23              |
| H373 May cause damage to organs through prolonged or repeated exposure          | R48/20/21/22              |
| H400 Very toxic to aquatic life   | R50/50-53                 |
| H410 Very toxic to aquatic life with long-lasting effects                       | R50-53                    |
| H411 Toxic to aquatic life with long-lasting effects                            | R51-53                    |
| H412 Harmful to aquatic life with long-lasting effects                          | R52-53                    |
| H413 May cause long-lasting harmful effects to aquatic life                     | R53                       |
| EUH059 Hazardous to the ozone layer   | R59                       |
| EUH029 Contact with water liberates toxic gas                                   | R29                       |
| EUH031 Contact with acids liberates toxic gas                                   | R31                       |
| EUH032 Contact with acids liberates very toxic gas                              | R32                       |
| EUH070 Toxic by eye contact   | R39-41                    |
| H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled | R42                       |
| H317: May cause allergic skin reaction  | R43                       |



## Specific points for discussion (2/4)

### 3. Criteria thresholds

**Trace quantities of hazardous substances** are likely to be present in mattresses.

It may be appropriate:

- A. to set specific **limit values for component/materials** rather than for the whole mattress
- B. to **decrease the 0.1 % threshold**, at least for some substances (e.g. to 0.01%)

**Should reference made on "component/material" and definition provided?**

**Which values for the weight threshold are more appropriate?**



## Specific points for discussion (3/4)

### 4. Derogation request

**Quantitative information** providing solid evidence that **alternatives do not exist** that at the same time: 1. are **safer**; 2. ensure an **adequate level of protection**; 3. are **present** in a sufficient number of products

**Could stakeholders kindly provide their feedback about the pieces of information requested?**

### 5. Substances classified according to art. 57 of REACH

**Should we refer to SVHC list or to ALL potential PBT/vPvB substances?**

**Is the 0.1% threshold reference appropriate or should be decreased as discussed in point 3?**



## Specific points for discussion (4/4)

### 6. Integration of other criteria into this horizontal approach

e.g. flame retardants, biocides, phthalates and other hazardous substances

**Pros:** simplifying the criteria document

**Cons:** more difficult to distinguish between different uses and properties of substances.

**What existing criteria could be absorbed within this horizontal approach?**  
**What specific uses/properties should be rather be handled (also) separately?**



## Outlook on potentially affected criteria

| Criteria Area | Issue   | Further points of discussion  |
|---------------|---|---|
| 1. Latex      | 1.1. Extractable heavy metals                                 |   |
|               | 1.2. Formaldehyde   |   |
|               | 1.3. Volatile organic compounds (VOCs)                        |   |
|               | 1.4. Dyes, pigments, flame retardants and auxiliary chemicals | In the Austrian Ecolabel, Azo-dyes are banned also if they may release <b>4,4'-Methylen-bis-(2-chloranilin)</b> (101-14-4). This is toxic to humans and environment and carcinogenic. If this criterion is kept, <b>this substance should be included in the list of banned aromatic amines.</b><br><br>The criteria are the same as Commission Decision 2009/567/EC of 9 July 2009 for <b>textile products</b> and could be updated. |
|               | 1.5. Metal complex dyes                                       |   |
|               | 1.6. Chlorophenols  | Blue Angel sets a limit also for the concentration of <b>Carbon disulphide</b> < 20 µg/m <sup>3</sup> . This prescription could be taken on board?  |
|               | 1.7. Butadiene  |   |
|               | 1.8. Nitrosamines   |   |



| Criteria area | Issue   | Further points of discussion  |
|---------------|---|---|
| 2. PUR        | 2.1. Extractable heavy metals                                 | As 1.1 – Latex.   |
|               | 2.2. Formaldehyde   | As 1.2 – Latex.   |
|               | 2.3. Volatile organic compounds (VOCs)                        | As 1.3 – Latex.   |
|               | 2.4. Dyes, pigments, flame retardants and auxiliary chemicals | As 1.4 – Latex.   |
|               | 2.5. Metal complex dyes                                       | As 1.5 – Latex.   |
|               | 2.6. Organic tin  | In the EU Ecolabel it is states that mono-, di- and tri-organic tin compounds are banned. Blue Angel does not allow the use of any organic form of tin (tin bonded to a carbon atom). <b>A wider ban could be prescribed</b>  |
|               | 2.7. Blowing agents   | The EU Ecolabel prescribe that halogenated organic compounds shall not be used as blowing agents, or auxiliary blowing agents<br>Blue Angel <b>completely ban the use of halogenated organic compounds</b> (e.g. chloro-organic carriers in textiles) and this <b>could be taken on board, if necessary</b> |



| Criteria area       | Issue  | Further points of discussion  |
|---------------------|--|---|
| 3. Wire and springs |  | The Austrian Ecolabel also prescribes that springs made of plastics must be free of halogenated organic compounds.<br><b>Should this be declared explicitly or the proposed new prescriptions on hazardous substances can sufficiently take this aspect on board?</b> |
| 5. Wooden material  | 5.2. Formaldehyde emission from untreated raw wood-based materials |   |



| Criteria area                          | Issue   | Further points of discussion  |
|--|---|---|
| <b>6. Textiles (fibres and fabric)</b> | Textiles used to cover the mattress shall meet the following criteria for dyes and other chemical products as well as for fitness for use (textiles which have been awarded the Community Ecolabel are in compliance with these criteria) | The <b>link to textiles</b> should be ensured.<br><br>Prescriptions on dyes and pigments are given as for latex foam, with the exception of metal complex dyes, where limit emissions to water are assigned.<br><br>Differently from the EU Ecolabel, Blue Angel also does not allow the use of the following substances:<br>- Azo dyes releasing 4,4'-methylene-bis-(2-chloroaniline) (101-14-4)<br>- Metal complex dyes based on cadmium, mercury, lead<br>- Disperse Yellow 3 C.I. 11 855 within the sensitising dyes.<br><br>If this criterion is kept, <b>these substances should be included in the list of banned aromatic amines.</b> |
|  | 6.1. Biocides   |   |
|  | 6.2. Auxiliary chemicals  |   |
|  | 6.3. Detergent, fabric softeners and complexing agents  |   |
|  | 6.4. Bleaching agents   |   |
|  | 6.5. Impurities in dyes   |   |
|  | 6.6. Impurities in pigments   |   |
|  | 6.7. Chrome mordant dyeing  |   |
|  | 6.8. Metal complex dyes   |   |
|  | 6.9. Azo dyes   |   |
|  | 6.10. Dyes that are carcinogenic, mutagenic or toxic to reproduction  |   |
|  | 6.11. Potentially sensitising dyes  |   |
|  | 6.12. Colour fastness to perspiration (acid, alkaline)  |   |
|  | 6.13. Colour fastness to web rubbing  |   |
|  | 6.14. Colour fastness to dry rubbing  |   |



| Criteria area  | Issue  | Further points of discussion |
|--|--|------------------------------|
| <b>7. Glues</b>  | Glues containing organic solvents are not permissible. Glues shall not be used which at time of application which are classified as carcinogenic (R45, R49, R40), harmful to the reproductive system (R46, R40), genetically harmful (R60-R63), toxic (R23-R28). The corresponding list of Hazard Statements is also provided. |                              |
| <b>8. VOC and SVOCs on the entire mattress</b>         |  |                              |
| <b>9. Flame retardants used in the entire mattress</b> |  | See later                    |
| <b>10. Biocides in the final product</b>               |  | See later                    |



## Issue 2b. Use of flame retardants (Revision)

*Existing criterion 9: Flame retardants used in the entire mattress:*

*Only reactive flame retardants are permissible: therefore all additive flame retardant contained in mattresses are not allowed by default.*

*If any of the **risk phrases** specified below are associated with the flame retardant prior to application, these must not apply once it is in its applied, reacted form:*

***R40** (limited evidence of a carcinogenic effect), **R45** (may cause cancer), **R46** (may cause heritable genetic damage), **R49** (may cause cancer by inhalation), **R50** (very toxic to aquatic organisms), **R51** (toxic to aquatic organisms), **R52** (harmful to aquatic organisms), **R53** (may cause long-term adverse effects in the aquatic environment), **R60** (may impair fertility), **R61** (may cause harm to the unborn child), **R62** (possible risk of impaired fertility), **R63** (possible risk of harm to the unborn child), **R68** (possible risk of irreversible effects)*



**'flame retardants'** = substances which limit or reduce the spread of fire. No reference to a specific class of substances.

Inclusion in products as a result of **fire safety concerns** (plastics in electronics, carpets and upholstered furniture including mattresses)

Legitimate **concerns over the health and environmental impacts** of adding these substances to products.

Concerns have led to **restrictions on their use**



European countries set **ignitability standards** for domestic mattresses:

Most of the **EU-27 countries** → resistance to cigarette (EN 1021 and 597)

**UK** → resistance to other sources, such as matches (BS 7177)

Mattresses used in non-domestic applications have higher standards

The **EU Ecolabel criteria** should:

1. ensure **health and environmental protection**
2. ensure that **technical standards** can be met



*Defra, June 2010, "Fire Retardant Technologies: safe products with optimised environmental hazard and risk performance"*

- Flame retardant apparently composed of **chlorinated phosphorus substances**.
- Risk phrases** satisfied
- Additive substances** used
- Ban on **halogenated or brominated** flame retardants not appropriate





**Main issues** identified through stakeholders consultation

1. Distinction between **additive and reactive** flame retardants
2. A full ban could make **impossible** for most of the products to meet both fire regulations across the EU and the existing EU Ecolabel criteria
3. Manufacturers may **not know** if materials which are bought meet the current specifications.



The existing criterion appears to **limit significantly** the penetration of the EU Ecolabel within this product group.

**Austrian and German** environmental labelling schemes ban all flame retardant substances



Two preliminarily proposals are made:

1. **Remove the criterion** related to flame retardants and rely on the **horizontal approach** limiting the use of hazardous substances and materials.
2. **Keep** the existing criterion, but reword it to **allow additive** flame retardants and **revise** the list of non-permissible **risk phrases**.

Derogations could be required in both cases

Both of the proposals do not make a distinction between flame retardants used as filling materials or as cover.



Information from stakeholders is required to understand:

1. **Feedback** on these proposals
2. Flame retardants **commonly used** in bed mattresses and market shares
3. **Most sustainable/acceptable** alternatives
4. Whether specific **derogations** are necessary



## Issue 2c. Use of biocides (Revision)

*Existing criteria:*

### **Textiles (6.1):**

*Chlorophenols (their salts and esters), PCB and organo-tin compounds **shall not be used** during transportation or storage of mattresses and semi-manufactured mattresses. Declaration of non-use: Verification by standard test may be required by extraction (as appropriate) and analysis by gas-liquid chromatography with an electron capture detector. The limit value is 0.05 ppm.*

### **Biocides in the final product (10)**

***Only biocidal products** containing biocidal active substances defined in relevant **EU Directive 98/8/EC** are allowed (specifically Annexes I, IA and IB), and only those specified for use in bed mattresses (Annex V of Directive 98/8/EC). This is confirmed by declaration of non-use, or providing a list of biocides used.*



Domestic mattresses with biocides appears a **niche market**

However,

1. Some **residual biocidal active substance** may be present from processing, particularly in textiles.
2. The existing criteria refer to a piece of legislation which is going to be transferred to the **REACH system**
3. **Healthcare mattresses** may use biocides for hygienic purposes (medical devices are **excluded** from the EU Ecolabel legislation)

Biocidal products are generally banned within Blue Angel



Two proposals are made:

1. Keep the **existing criterion**.  
"white-list" approach to be transferred into the REACH system.
2. **Horizontal approach**.

Provisions may be made for substances appearing in trace quantities, such as residual biocides from cotton production.

An upper limit of 0.01% by weight was suggested by stakeholders

Alignment with the EU Ecolabel revision of textiles is necessary



## Issue 2d. Use of phthalates (NEW!)

**Phthalates** are a group of chemicals commonly used as a **plasticiser**

Their use has been subject to **significant health and environmental concerns.**

**No criterion** on bed mattresses limits the use of phthalates

The presence of phthalates in mattresses appears to be limited to the use as a plasticiser in **PVC coverings (baby and medical mattresses)**



Phthalates have been more rigorously treated in **other product groups** within the EU Ecolabel (e.g. paints and varnishes)

*"Only phthalates that at the time of application have been risk assessed and have not been classified with the phrases (or combinations thereof): R60, R61, R62, R50, R51, R52, R53, R50/53, R51/53, R52/53, in accordance with Directive 67/548/EEC, may be used in the product (if applicable). Additionally DNOP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (di-isodecyl phthalate) are not permitted in the product"*

The phthalates listed above, as well as DEHP, BBP and DBP are also specifically banned from toys due to evidence they may be endocrine disruptors.



Two proposals are made:

1 Apply a **ban on phthalates** because they are commonly found in the PVC present in baby mattresses.

2. **Horizontal approach.**

It may be also appropriate to have a **more extensive ban** to match legislation for toys.



### Criteria area 3.

**Other issues**



### Issue 3a. Increasing the consumer awareness on the EU Ecolabel (NEW!)

One of the reasons for the **low market uptake** of the EU Ecolabel for this product group?

**Not possible to address** this point within the revision of this product group

A horizontal **strategic approach** is needed for all the product

However, producers participate to the promotion of the EU Ecolabel scheme by **informing consumers** on the advantages associated with the EU flower.



### Issue 3b. EMS / CSR criteria (NEW!)

Increasing and demonstrating the **responsibility of mattresses producers** on environmental and social topics.

It is thus **proposed for discussion** the possibility to add further prescriptions on the implementation in the production facility of:

1. **Environmental Management Systems** (e.g. EMAS or ISO 14001)
2. **Corporate Social Responsibility schemes** (e.g. SO 26000)



### Issue 3c. Alignment with the EU Ecolabel criteria for textiles (Revision)

The **revision of the EU Ecolabel criteria for textiles** is closely related to this revision

Criteria related to textiles will change, with the possibility of becoming stricter

Could this create a **barrier** for the mattresses producers?

What are the **most sensitive parameters** which could affect negatively the uptake of the EU Ecolabel?

Should **criteria explicitly reported** in the criteria document or a **reference to the textiles product group** made?



### Issue 3d. Simplification and consistency of the criteria (Revision)

Another element to discuss is the **complexity** of the existing criteria document, apparently coupled with presence of some **inconsistencies**.

Several issues were found through the **criteria document screening**

Some already addressed before, **others presented** briefly **now**

**Changes** related to: Content; Formulation; References; Structure

**Work in progress** and also based on **stakeholders feedback**



## Issue 3d. Simplification and consistency of the criteria (Revision)

| Criteria area | Issue  | Points of discussion  |
|---------------|--|---|
| 1. Latex      | The following criteria need only be met if latex contributes to more than 5 % of the total weight of the mattress. | Blue Angel does not set any threshold. <b>The existing 5% threshold could be maintained or it should be decreased</b>           |
|               | 1.1. Extractable heavy metals  |   |
|               | 1.2. Formaldehyde  |   |
|               | 1.3. Volatile organic compounds (VOCs)   |   |
|               | 1.4. Dyes, pigments, flame retardants and auxiliary chemicals  | This criterion deals only with dyes and pigments. The terms <b>"flame retardants and auxiliary chemicals should be removed"</b> |
|               | 1.5. Metal complex dyes  | This criterion could be <b>merged to point 1.4.</b>   |
|               | 1.6. Chlorophenols   |   |
|               | 1.7. Butadiene<br>1.8. Nitrosamines  |   |



## Issue 3d. Simplification and consistency of the criteria (Revision)

| Criteria area | Issue   | Points of discussion   |
|---------------|---|--|
| 2. PUR        | The following criteria need only be met if PUR foam contributes to more than 5 % of the total weight of the mattress. | Blue Angel does not set any threshold. <b>The existing 5% threshold could be maintained or decreased</b> |
|               | 2.1. Extractable heavy metals   | As 1.1 – Latex. <b>Criteria for Latex and Foam could be merged in a single group</b>                     |
|               | 2.2. Formaldehyde   |  |
|               | 2.3. Volatile organic compounds (VOCs)  |  |
|               | 2.4. Dyes, pigments, flame retardants and auxiliary chemicals   |  |
|               | 2.5. Metal complex dyes   |  |
|               | 2.6. Organic tin  |  |
|               | 2.7. Blowing agents   |  |





## Issue 3d. Simplification and consistency of the criteria (Revision)

| Criteria area       | Issue  | Points of discussion   |
|---------------------|--|--|
| 3. Wire and springs | Wires and springs – Only applicable if PUR foam contributes to more than 5% of the total weight of the mattress                                      | <b>This refers wrongly to PUR</b> and the wording is thus to be changed.<br><br>Blue Angel does not set any threshold. <b>The existing 5% threshold could be maintained or decreased</b> |
|                     | 3.1. Degreasing  |  |
|                     | 3.2. Galvanisation   |  |
| 4. Coconut fibres   | If rubberised, latex used must comply with criteria for latex foam   | This criterion could be <b>merged with Latex</b>   |
| 5. Wooden material  | 5.1. Sustainable forest management   | <b>This sentence appears wrong</b> and thus it should be deleted.  |
|                     | If degreasing and/or cleaning of wire and/or springs is carried out with organic solvents, use shall be made of a closed cleaning/degreasing system. | <b>Reference to furniture</b> (to be revised) could be made  |
|                     | 5.2. Formaldehyde emission from untreated raw wood-based materials   |  |



## Issue 3d. Simplification and consistency of the criteria (Revision)

| Criteria area                   | Issue   | Points of discussion   |
|---------------------------------|---|--|
| 6. Textiles (fibres and fabric) | Textiles used to cover the mattress shall meet the following criteria for dyes and other chemical products as well as for fitness for use (textiles which have been awarded the Community Ecolabel are in compliance with these criteria) | Prescriptions on dyes and pigments are given as for latex foam, with the exception of metal complex dyes, where limit emissions to water are assigned. <b>A reference to textiles or to latex</b> could be made to simplify the criteria |
|                                 | 6.1. Biocides   |  |
|                                 | 6.2. Auxiliary chemicals  |  |
|                                 | 6.3. Detergent, fabric softeners and complexing agents  |  |
|                                 | 6.4. Bleaching agents   |  |
|                                 | 6.5. Impurities in dyes   |  |
|                                 | 6.6. Impurities in pigments   |  |
|                                 | 6.7. Chrome mordant dyeing  |  |
|                                 | 6.8. Metal complex dyes   | The <b>same criteria order of Latex</b> could be followed. Criterion on metal complex dyes should be thus moved after the criterion on potentially sensitising dyes (6.11).  |
|                                 | 6.9. Azo dyes   |  |
|                                 | 6.10. Dyes that are carcinogenic, mutagenic or toxic to reproduction  |  |
|                                 | 6.11. Potentially sensitising dyes  |  |
|                                 | 6.12. Colour fastness to perspiration (acid, alkaline)  |  |
|                                 | 6.13. Colour fastness to wet rubbing  |  |
|                                 | 6.14. Colour fastness to dry rubbing  |  |



| Criteria area                                   | Issue  | Points of discussion  |
|---|--|---|
| 7. Glues  | Glues containing organic solvents are not permissible. Glues shall not be used which at time of application which are classified as carcinogenic (R45, R49, R40), harmful to the reproductive system (R46, R40), genetically harmful (R60-R63), toxic (R23-R28). The corresponding list of Hazard Statements is also provided. | <b>R40 refers to cancer.</b> Risk phrases need to be checked and updated. The same for <b>reference to directives</b> . For instance, here the reference is to Directive 1999/45/EC while before to Directive 67/548/EEC.   |
| 8. VOC and SVOCs on the entire mattress         |  |   |
| 9. Flame retardants used in the entire mattress |  | <b>if no change were applied</b> to the criterion, the term "excluding" within the sentence "Flame retardants which are only physically mixed into the mattress materials or coatings are excluded" can be misinterpreted.  |
| 10. Biocides in the final product               |  |   |
| 11. Durability                                  |  |   |
| 12. Packaging requirements                      | Packaging shall be made from recyclable material, with plastic type marked according to ISO 11469. Specified text referring to the EU Ecolabel must appear.  | <b>Packaging do not seem to be a major environmental issue</b> and thus it could be discussed if this criterion is really necessary or if it can be modified/deleted  |
| 13. Information appearing on the Ecolabel       | Box 2 of the Ecolabel shall contain specific text related:<br>-'Minimises indoor air pollution'<br>-'Hazardous substances restricted'<br>-'Durable and high quality'   | <b>Durable and high quality</b> could be moved at the top of the list<br>Air pollution and <b>hazardous substances</b> could be merged in one point<br>A third point could relate on other <b>environmental issues</b> , which are currently not covered by the existing criteria |