



# **Guidance to sustainable construction materials: how can BASTA help us to reduce the presence of hazardous substances in construction products**

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# What am I to talk about?

- What is BASTA?
- Background
- How does BASTA work?
- Effects of BASTA
- What about emissions?



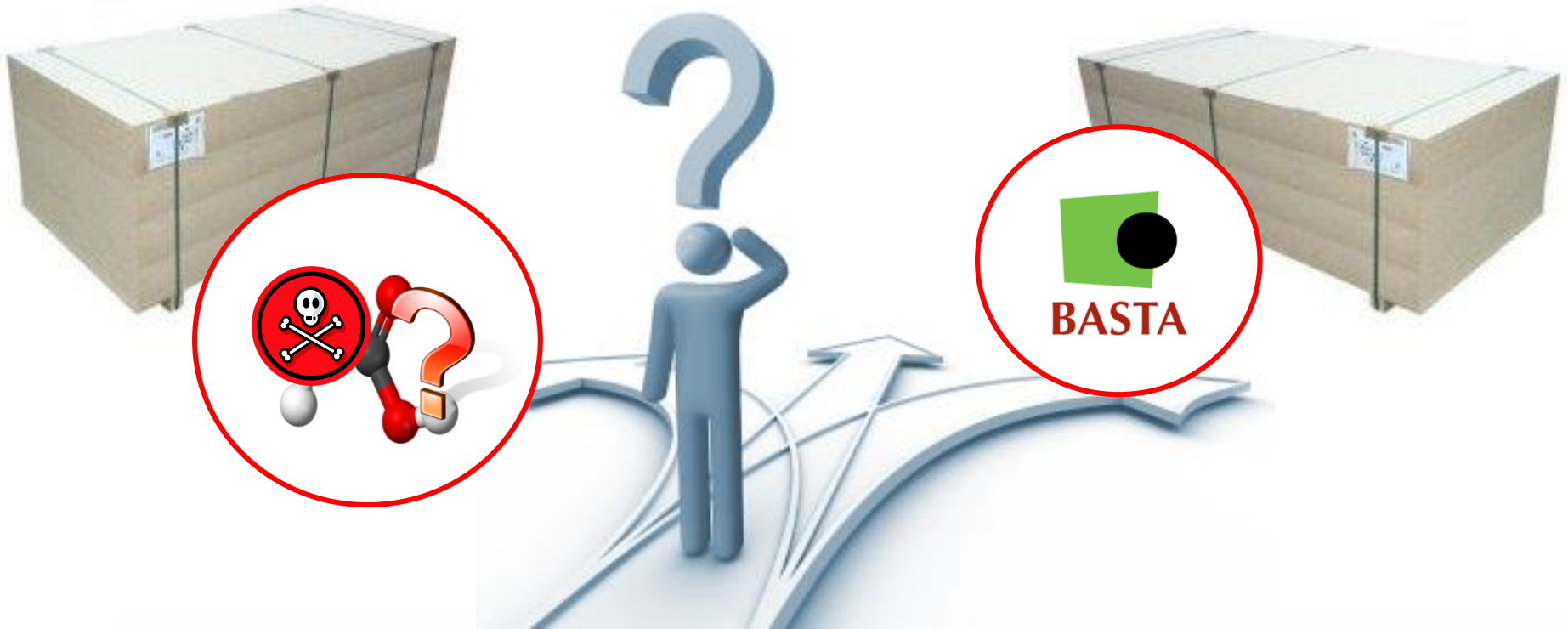
# What is BASTA?

- A strategy for achieving society's long term goal of an environment free of hazardous substances
- Practical methods to
  - ensure knowledge and access to information about hazardous substances in the supply chain
  - ensure construction without especially hazardous substances
  - motivate & drive the development of products without especially hazardous substances



# Making a difficult choice easy for the buyers

buyer's tool – seller's possibility



# Background



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**Consequence:** A strong market driven requirement regarding the chemical content in products among developers, in order to minimise future risks.

### The Sony Ericsson list of banned substances (in products)

Group of substances	Banned Substance	CAS-number	Examples of main areas of use	Main risks	Maximum Concentration Value <sup>1</sup>
Metals and their compounds	Cadmium and its compounds	Various	Stabilizers or pigments in plastics, ceramics in capacitors, batteries	Toxic	Plastics, inks, paints, textiles, rubber and resins: 5 ppm Others: 100 ppm
	Chromium (VI) compounds	Various	Corrosion inhibitors, pigments in plastics and inks, leather tanning	Allergenic, carcinogenic	Leather and textiles: 10 ppm Others: 1000 ppm
	Lead and its compounds	Various	Plastics, printing inks, solders, surface finishes	Bioaccumulative	Plastics, inks, paints, textiles, rubber and resins: 100 ppm Others: 1000 ppm
	Mercury and its compounds	Various	Batteries	Toxic	Plastics, inks, paints, textiles, rubber and resins: 5 ppm Others: 1000 ppm
	Antimony and its compounds Application: See section 4.	Various	Flame retardants, electronic components, LCD:s	Toxic, negative for recycling	1000 ppm
	Beryllium, beryllium alloys and beryllium compounds Application: See section 4.	Various	Connectors	Carcinogenic	1000 ppm
	Nickel, nickel alloys except in steel alloys and nickel compounds. Application: See section 4.	Various	Decorative metal finishes, barrier layers	Allergenic	See section 4.
Halogenated flame retardants and halogenated organic compounds	All halogenated flame retardants and other halogenated organic compounds, including <ul style="list-style-type: none"> <li>▪ Polybrominated biphenyls (PBBs),</li> <li>▪ Polybrominated diphenylethers (PBDEs)</li> <li>▪ TetrabromobisphenoI-A (TBBA, TBBPA) and</li> <li>▪ Hexabromo cyclododecane (HBCDD).</li> </ul> Application: See section 4.	Various	Printed boards, plastics, textiles	Bioaccumulative Ecotoxic	See section 4.



# This is how the idea of BASTA was born.

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# How does BASTA work?

Based on inherent properties of the substances, rather than the specific (listed) substances. Risks not considered - No occurrence = no risk

- Carcinogenic
- Germ cell mutagenic
- Toxic to reproduction
- Effect during lactation
- Endocrine disrupting
- PBT
- vPvB
- Lead, Mercury and Cadmium
- Dangerous to the ozone layer
- Sensitising
- Acute toxic
- Causes damage to organs after single exposure
- May be fatal if swallowed and enters airways (aspiration toxicity)
- VOCs
- Very toxic to aquatic life





# Where does the criteria originate from?

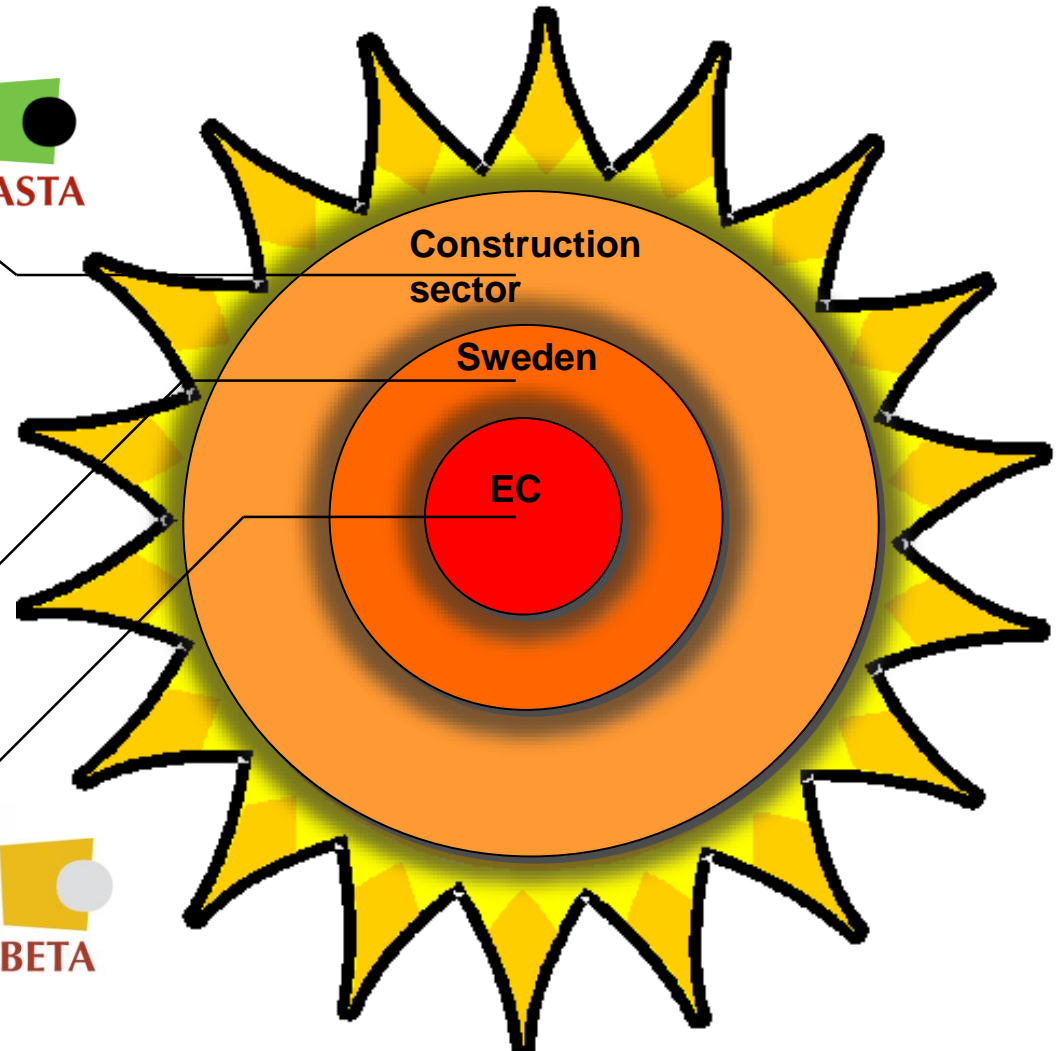
**CLP + building & construction sector**  
CR (cat.2)  
Effect during lactation  
Acute toxicity  
Volatile organic compounds



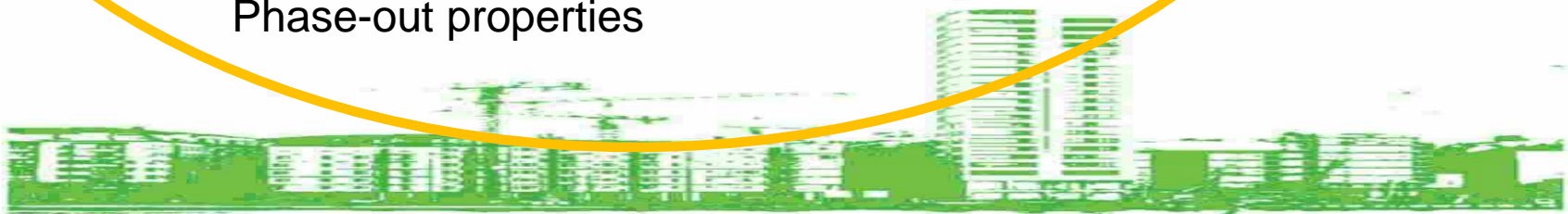
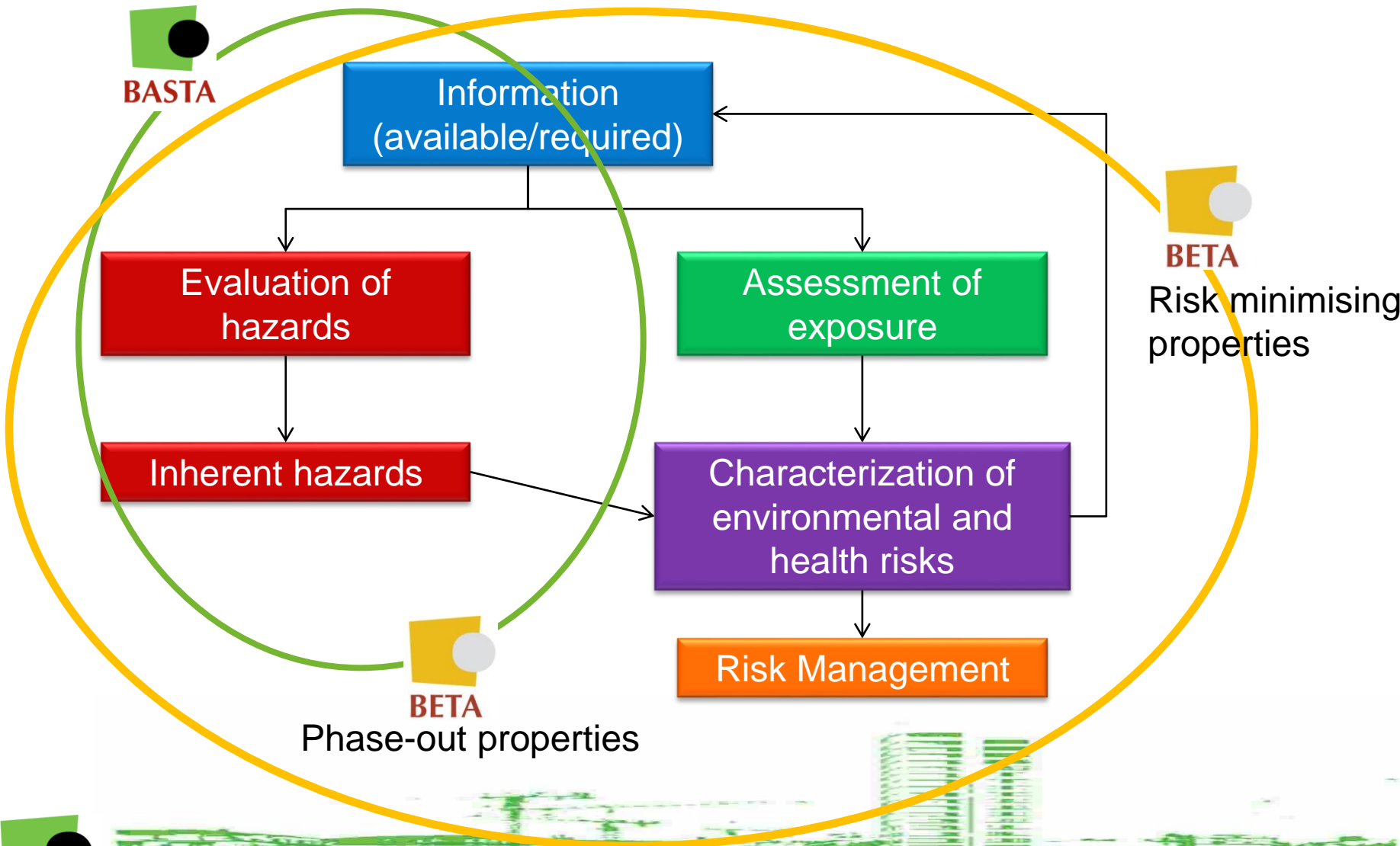
**Prio – risk reduction**  
Sensitising  
Germ cell mutagenic (cat. 2)  
Very high acute toxicity  
High chronic toxicity  
Environmentally harmful long-term effects

**Prio - phase out**  
Particularly hazardous metals  
Ozone depletion

**REACH - SVHC**  
CMR (1A and 1B)  
PBT  
vPvB  
Endocrine disruption



# BASTA versus BETA



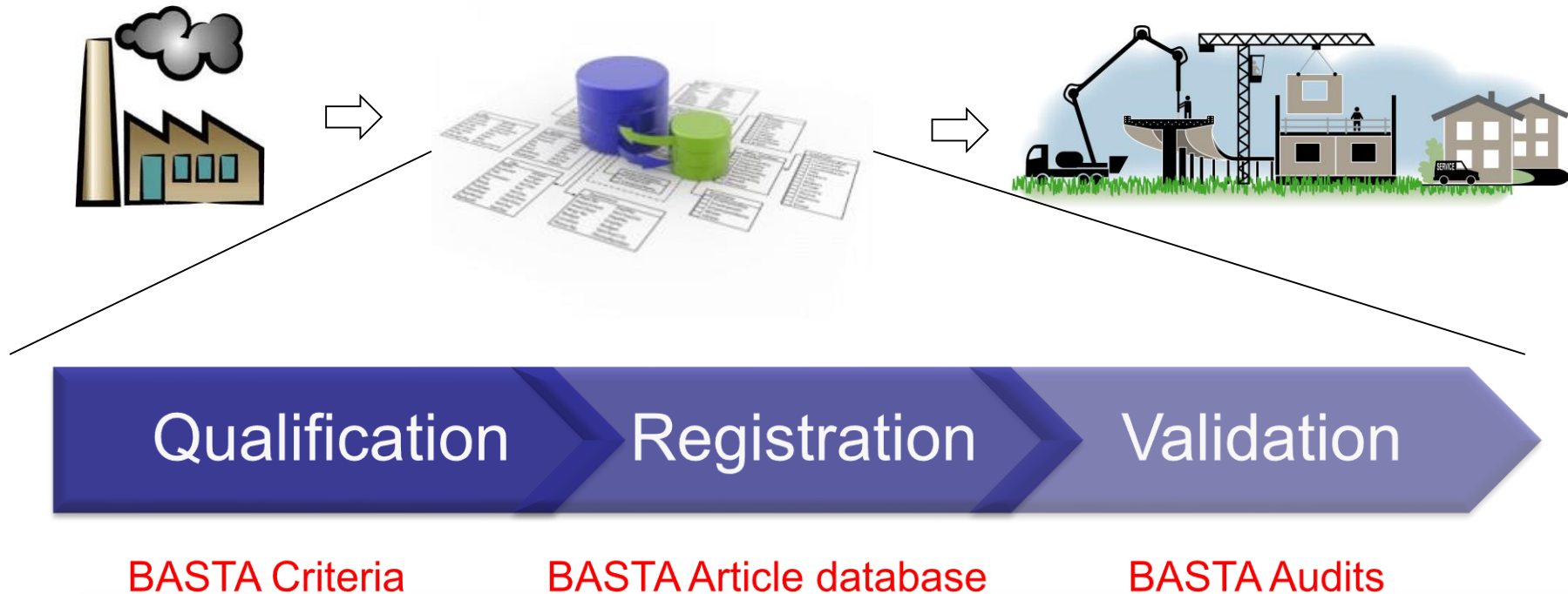


## Why the BETA-register?

- Products that can not be proven to meet the BASTA-criteria (need to be able to meet a slightly lower level of properties criteria).
- The same stringent methodology as products found in the BASTA-register, but allows for the presence of substances with properties that may involve an potential risks which is limited in time and space, but may be prevented with this knowledge



# The BASTA Processes



# Effects of BASTA

Example from a large “product user”: the Swedish Transport Administration:

The Swedish Transport Administration (Trafikverket) uses the BASTA criteria in order to minimise risks for future damages/costs

In a pilot study they have investigated how far it is possible to reduce the amount of hazardous substances in their products through an active choice of material/products using the BASTA criteria

Pilot study: Reconstruction of road RV49 between Gustavstorp – Rude and 3 km new road



# Resultat – materials and articles

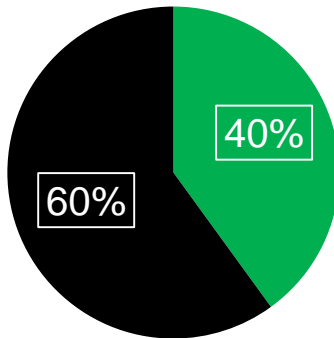


TRAFIKVERKET  
SWEDISH TRANSPORT ADMINISTRATION

Totalt number of materials and articles: 39 = 2 600 tons

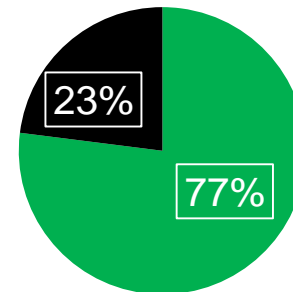
## Baseline

- A - BASTA eller motsvarande klassning i andra system (BVB, SHMD)
- OKÄNT innehåll



## Result after an active product choice

- A - BASTA eller motsvarande klassning i andra system (BVB, SHMD)
- OKÄNT innehåll



Contacts with suppliers have increased the share of materials and articles with a known chemical content from 40 % till 77 %



BASTA



# Effects of BASTA

Example from a producer (HILTI):



A strong demand on the Swedish market for a "green grouting" made Hilti develop a new product using the BASTA-criteria.



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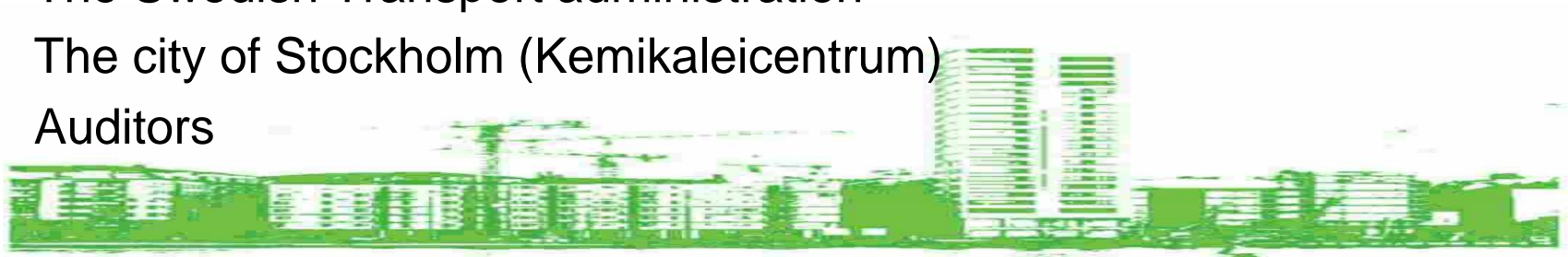


# Development of the BASTA criteria

The criteria are developed by the BASTA scientific council

Members:

- KEMI
- Experts
- The Swedish construction federation
- The building material industries
- Building companies
- Property owners
- The Swedish Transport administration
- The city of Stockholm (Kemikaleicentrum)
- Auditors



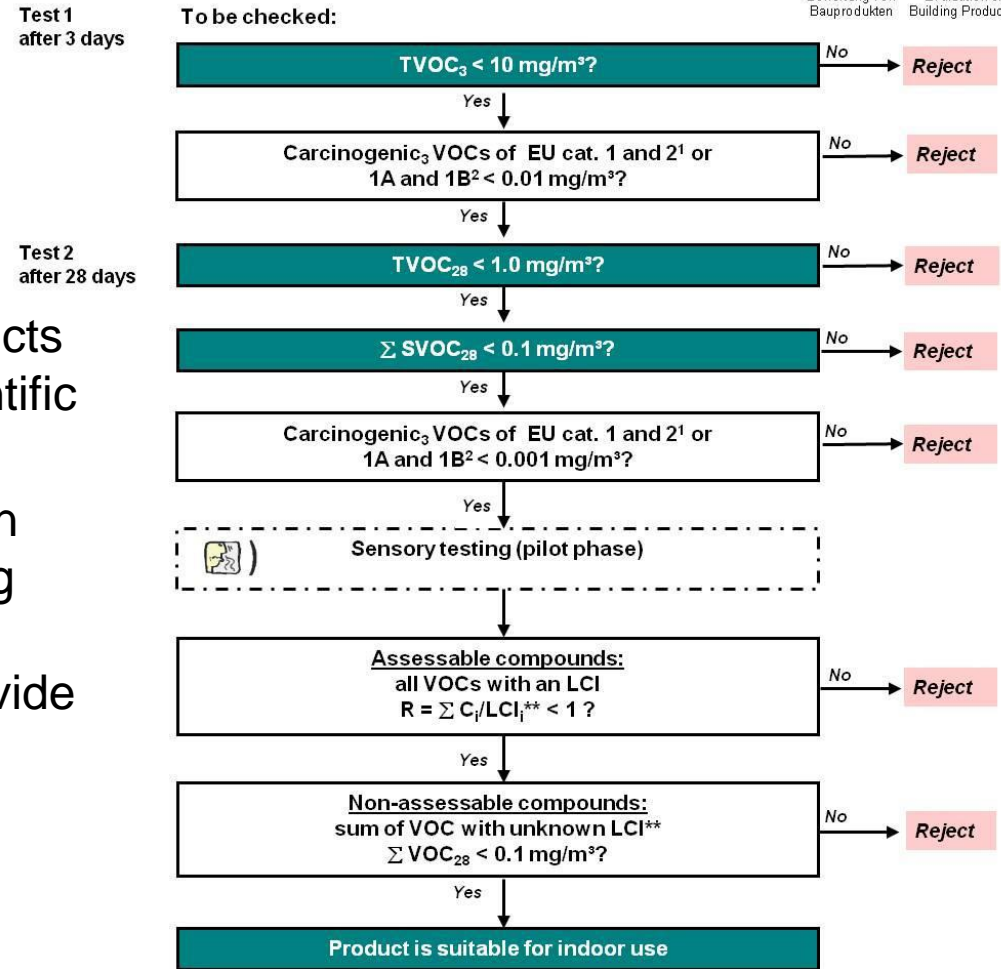


# What about emissions?

- The possibility to include emissions from construction products is being discussed within the scientific council.
- IVL have an on-going EU-project in which we "test" a way of evaluating emissions through the use of the German AgBB\*-scheme = will provide important input to BASTA.

\*AgBB: Committee for Health-related Evaluation of Building Materials

Fig. 1: Flow chart for the evaluation of VOC\* and SVOC\* emissions from building products



Thank you for the attention!

