Umwelt Bundes For our Environment

# **Challenges in Harmonising the Evaluation of Building Product Emissions in Europe**

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A prerequisite for healthy air quality indoors is the use of low emitting materials. In 2014, there will be three mandatory systems in place to evaluate the emission properties of building products in Europe: In Germany, since 2006 the AgBB-Scheme defines pass-fail criteria with, at its core, a long list of 176 assessable substances; in France, since 2012 a labelling decree defines emission classes for 10 indoor pollutants, and in <u>Belgium</u>, beginning in 2014, a Royal decree demands building products to comply with a set of criteria focusing on evaluation by means of a long list of assessed substances, similar to the German procedure. The Belgian decree refers to a future European list with harmonized evaluations referencing the "Lowest concentration of Interest (LCI)".

### **Reality challenges:**

Besides the mandatory systems there are a number of voluntary, health related quality labels in European countries offering help for the consumer to choose a 'safe' product in regard to controlled emissions. Four major European labels had joined an initiative to harmonize the different labelling criteria; the result was a proposal published in 2012 in ECA Report 27.

The core of a harmonized evaluation was seen in a harmonized list of assessed substances with so called LCI values for an appropriate number of substances encountered in emission tests.



Different regulations in Germany France and Belgium... DIB JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANCAIS Allaemeine bauaufsichtliche

rrêté du 19 avril 2011 relatif à

La ministre de l'écologie, du dévelo

Vu la directive 98/34/CE du Parlement

information dans le domaine des normes

Art. 1er. - Au sens du présent arrêté, o

conomie, des finances et de l'industrie

Décrets, arrêtés, circulaires

TEXTES GÉNÉRAUX

ertain intended uses

DRAFT **KINGDOM OF BELGIUM** 

FEDERAL PUBLIC SERVICE OF HEALTH, FOOD CHAIN SAFE

AND ENVIRONMEN

regard to Regulation (EU) No. 305/2011 of the

European Parliament and the Council of 9 March 2011 laying

down harmonised conditions for the marketing of construction

Having regard to the Act of 21 December 1998 on product standards to promote sustainable production and consumption

patterns and to protect the environment, public health and

products and repealing Council Directive 89/106/EEC;

Royal Decree establishing threshold levels

reetings to all present and future citizens

employees, Articles 5,  $\S$  1, 1 and 3, and 15,  $\S$  3:

ALBERT II, King of the Belgians

the indoor environment from construction

**MINISTÈRE DE L'ÉCOLOGIE. DU DÉVELOPPEMENT** 

#### Industry/manufacturers perspective:

• Different Regulations in different member states hinder the free movement of products (barriers to trade/barriers to use). Therefore Industry is aiming for a harmonised European product assessment scheme.

• A European product emissions assessment scheme should be health-based and scientific but still pragmatic.

• Substance-related health-based limit values for the same purpose (e.g. consumer, long-term, inhalation) should be the same in different legislations.

• Beside product emissions, all other relevant parameters which are relevant for Indoor Air Quality should be considered.

and consistency

#### **Toxicological challenges:**

Choice of appropriate key studies and lowest dose for the relevant effect to base the evaluation on. **Transparent documentation** and explanation of reasons for defining the threshold of "lowest concentration of interest, LCI"

			Compound		NAMEOFO
	-		Parameter	Note	Co
		I NOAEL	EU-LCI Value and Status		
			EU-LCI value	1	Mass/v
		[animal]	EU-LCI status	2	interir
		[animai]	EU-LCI year of issue	3	Year when
				_	has
			General Information	1	
	Exposure duration		ELP-INDEX-NF.	4	FINECS
_			CAS-Nr	6	Chemical Abs
Former way:			Harmonised CLP	7	Human H
i onnor way.			classification	1 ′	cla
-			Molarmass	8	CIA
	· · · · · · · · · · · · · · · · · · ·		Key Data / Database		
			Key study,	9	Critical study
			Author(s),		ef
			Year		
		NOALL	Read across compound	10	Wher
		<b>F</b> 1	Species	11	rat
IVIAN		lhumani	Route/type of study	12	Inhalat
		[	Study length	13	Days, sub
			Exposure duration	14	Hrs/d:
	Exposure duration		Critical endpoint	15	Effe
	Exposure duration		Point of departure (POD)	16	LOAEC*L, N
					Bench
	SC-C  /4.2		POD Value	17	[mg/1
			Assessment Factors (AF)	18	
	· · ·		Adjustment for exposure	19	Stud
			duration	20	hrs/da
			AF Studu longth	20	Sa
	First second stars 1		Boute-to-route	21	<u> </u>
	Intraspecies		extrapolation factor	21	
	From the bound of the state of		AF	22a	Reliability
			Dose-response	1 a	LOAF
$\mathbf{v}$			Dose response	22b	Severity
•			Interspecies differences	23a	A
					Metabo
				23b	Kinet
			Intraspecies differences	24	Kinet
					Worker - G
			AF	25	Children or o
			Sensitive population		
			Other assessment factors:	26	Completene
			quality of whole database		Reliability of a
			Result		
			Summary of assessment	27	Total Asses
			factors		
			POD/TAF	28	Calculated va
	•		Moley adjustment forter	20	II.e1 -
			Bounded value (FULLCD	29	Used i
NIK	LCI		Additional Comments	30	
			Additional Comments	1 31	
			PATIONAL E Section	32	1
	1		INATIONALE Section	1 34	

**Assessment factors** in the right size to catch toxicological ground from documented effects d safe levels LCIs need to be set ,just right'- to be safe well below the concentration at which health effects have been documented,

but not so low as to be impractical

Zulassung

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French and German regulations

include different substances, LCI

Belgium refers to the EU-LCI list

values and approaches to labelling.



"Read across": Evaluation of data-poor substances by referencing toxicological properties of well known sister substances

**Examples for structure analogies** 



#### **Implementation challenges:**

Gr	Growing list of EU-LCIs for harmonized evaluation										
EU-LCI no.	CAS no.	Compound	EU-LCI	NIK (µg/m³)	Remarks / derived from	CLI (µg/m³)	Remarks / derived from	Explanatory note	Status of EU-LCI values		
			Interim	AgBB		AFSSET					
			2012	2012		2009					
1		Aromatic hydrocarbons									
1-1	108-88-3	Toluene	2900	1900	EU: Repr. 2; Individ. substance evaluation	300	VG Index 2005 ; EU Repr. Cat. 3		'Derived' Interim EU-LCI		
1-2	100-41-4	Ethylbenzene	850	880	OEL D	750	VTR RIVM		'Derived' Interim EU-LCI		
1-3	1330-20-7 106-42-3 108-38-3 95-47-6	Xylene (o-, m-, p-) and mix of o-, m- and p-xylene isomers	500	2200	EU-OEL	200	VG In dex		'Derived' Interim EU-LCI		
1-4	98-82-8	Isopropylbenzene (Cumene)		1000	EU-OEL/OEL D	400	VTR IRIS US EPA		EU-LCI 'with derivation pending'		

The need and key benefits of a complete EU-LCI list for regulators, manufacturers, architects and consumers:



# Goal: Healthy indoor air with low emissions as reasonably achievable

Architects need transparent and practical information when designing healthy indoor environments with several materials





A EU-LCI working group coordinated by the Joint Research Center of the European Commission has started to develop a new science-based harmonized procedure to derive health related thresholds for all those substances regulated in France and Germany. A pragmatic approach has been adopted for substances whose LCIs did not differ substantially in France and Germany. After a two year effort by experts from nine European countries an Interim EU-LCI list was presented to the Commission and industry stakeholders in December 2012. The approach and results were unanimously appreciated. The outcome will be published UBA in a new report ECA 29 in 2013 ..... but the fate of this activity remains open as long as no European Commission entity (DG SANCO, DG ENTR or DG ENV) makes a commitment to take care of this low cost but highly effective and important activity. So perhaps the biggest challenge at present is to foster the will of the European Commission....



and

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http://www.umweltbundesamt.de/produkte-e/bauprodukte/agbb.htm