



THE GUT / PRODIS LABEL

an environmental **Product Information System**
for textile floor coverings

*Healthy Building Conference 2009, Syracuse, NY
Dr. Edmund Vankann*

Gemeinschaft umweltfreundlicher Teppichboden



GUT

GEMEINSCHAFT UMWELTFREUNDLICHER TEPPICHBODEN

- GUT was established in **1990** originally as a German based organization and evolved into a European organization already during the first 5 years
- Today nearly **90%** of the EU producers of wall to wall carpets voluntarily participate in the **GUT-System for low VOC emitting floor-coverings**
- The GUT-system integrates the whole production chain -from raw materials to final products

Gemeinschaft umweltfreundlicher Teppichboden



THE GUT-SYSTEM

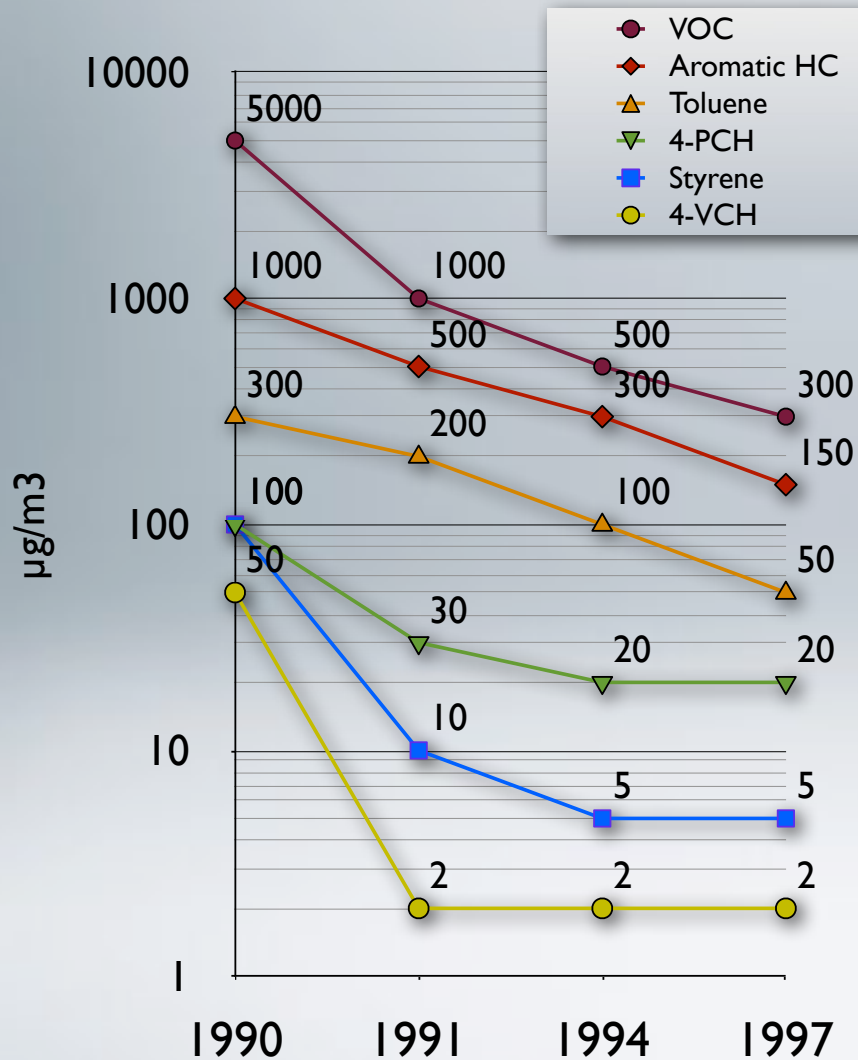
IS SEPARATED INTO DIFFERENT STEPS

- **Production control** (principle)
 - "to ensure very low VOC-emissions in the product, you have to start with already optimized low VOC raw materials"
 - specific chemicals are either already forbidden to be used or their content is regulated. Examples are:
 - heavy metals, dyestuffs, biocides, flame retardants, formaldehyde, plasticizers, CMR-substances, monomers in polymer dispersions, etc.
- **Product control:**
 - a) hazardous chemicals b) odor c) emissions
- **Continuous survey** of
 - a) raw materials b) production and c) products
 - on a yearly basis → GUT/PRODIS control system

Gemeinschaft umweltfreundlicher Teppichboden



EVOLUTION OF VOC THRESHOLDS



1997-2001

full adaption of ISO 16000
test chamber conditions

2001-2003

adaption of ECA 18 principles
for the evaluation of VOCs

2004

adaption of AgBB principles
including the use of
always "latest" LCI-list

Test and evaluation procedure is fully
compatible with AgBB (DIBt) or AFSSET

Gemeinschaft umweltfreundlicher Teppichboden

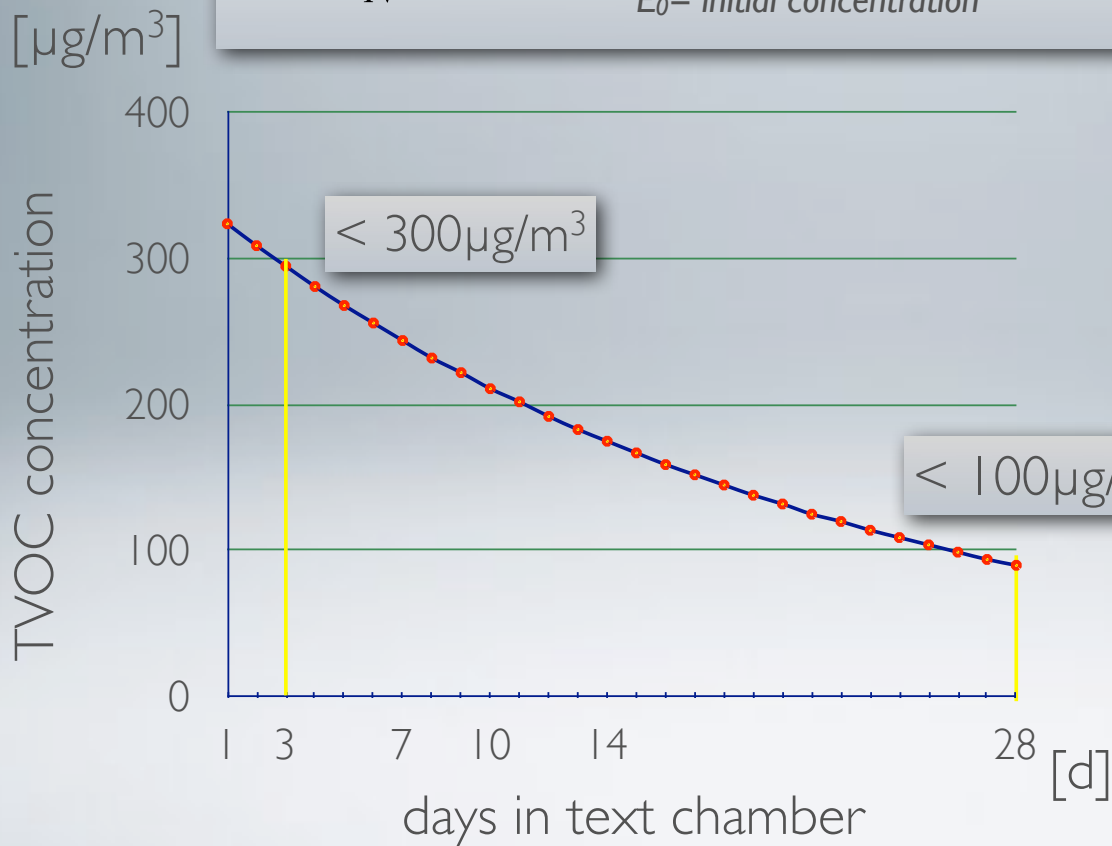


TVOC- decay curve

calculated using the Levsen-Sollinger equation ⁽¹⁾
 k determined based on published BAM-data (Wilke et al.)

$$C = \frac{L}{N} \cdot E_0 \cdot e^{-k \cdot t}$$

(1)
 L = loading factor [m²/m³] = 0,4
 N = air exchange rate [h⁻¹] = 0,5
 E₀ = initial concentration



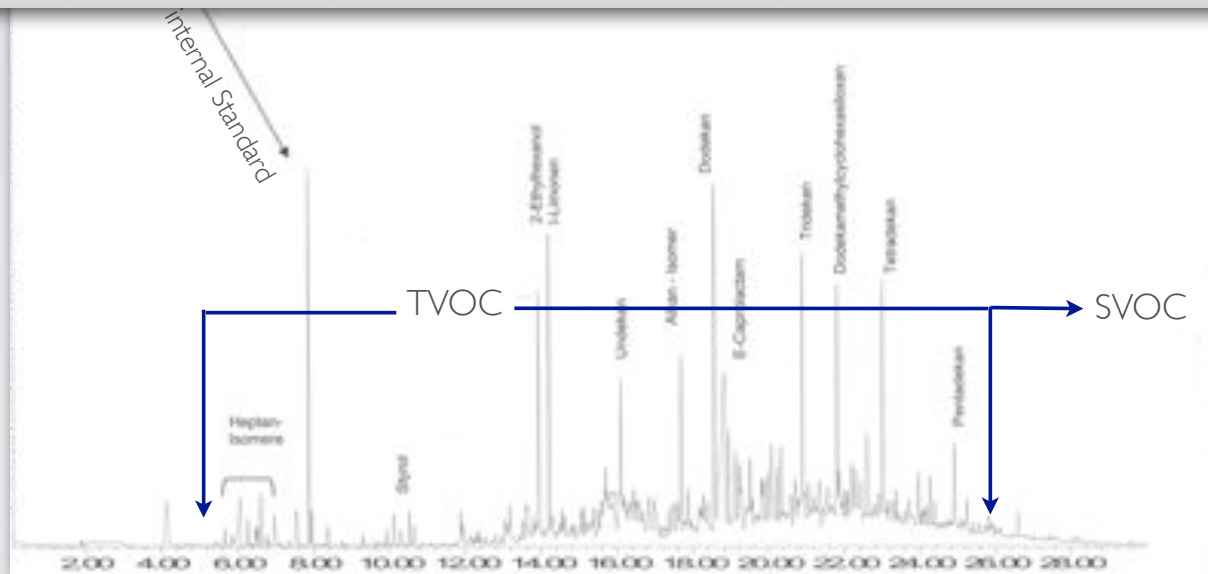
GUT-Thresholds	
Criteria	3rd day [µg/m ³]
TVOC	300
TVOC no LCI + not identified	100
TVOC with LCI	R<I
SVOC	30
Carcinogens EU class 1+2	<1
Formaldehyde	10
4-PCH	20
Styrene	5



WHAT IS EVALUATED?

- each **individual** peak
- **identified substances** are compared with LCI list (>250 substances)
- **non identified substances**, peak **clusters** and **substances without LCI** are summed up. Concentration has to be lower than $100 \mu\text{g}/\text{m}^3$ threshold.
- **TVOC**: substances between C_6 and C_{16}
- **SVOC** : substances between C_{16} and C_{23}
- presence of **carcinogens** according EU list
- **Formaldehyde** and Aldehyde emissions using DHNP-Tubes

Example : Emission profile of tufted PA6 carpet with PP-textile backing



Gemeinschaft umweltfreundlicher Teppichboden



COMPARISON WITH OTHER LOW VOC SYSTEMS FOR CARPETS

CRI Green Label PLUS

- difference:** GLP : air exchange rate is 1,0 [h⁻¹]. GUT : AER is 0,5 [h⁻¹]
- consequence:** to compare thresholds CRI GLP thresholds have to be multiplied with 2 !
- difference:** GLP only looks at TVOC and 13 selected substances "chemicals of concern"
GUT considers all substances (see AGBB (D) and AFSSET (F))
- main difference:** GLP allows Benzene emissions
(30 µg/m³ US-system equal to 60 µg/m³ ! EU System
GUT- Benzene (carcinogenic substance) is strictly regulated.
knock-out criterion is : 1 µg/m³ (not detectable)

Gemeinschaft umweltfreundlicher Teppichboden



GUT'S EXTENDED PRODUCT INFORMATION SYSTEM PRODIS



www.pro-ids.info

- informs about use-classes and additional product characteristics strictly based on EU standards
- informs about chemicals and VOC-emissions based on AGBB/AFSSET-criteria
- public access to information via website and registration code
- provides additional environmental information (EPD) for the use in "Green Building" labeling system
- comprehensive control system for emissions and technical specifications by notified European test labs

Gemeinschaft umweltfreundlicher Teppichboden



GUT'S ENVIRONMENTAL PRODUCT DECLARATIONS

- are based on a comprehensive LCA for textile floor-coverings
- are in compliance with the European PCR document for "Textile Laminate and Resilient Floor Coverings"
- are third party validated by IBU (Institute Bauen und Umwelt, D)
- are available for GUT/PRODIS registered products
- can be downloaded directly from the GUT/PRODIS web-side
- inform about environmental impact categories like: primary energy consumption (PE), green house warming potential (GWP), ozone depletion (ODP), acidification (AP) etc
- give comprehensive information about the environmental impact during the use phase and the end of life scenarios



Gemeinschaft umweltfreundlicher Teppichboden

