



**Report
No. 280944**



Assessment of Volatile Organic Compounds (VOC) in a house

**Project: House of Marcel Laskody / Pamela McDonnell
Cloghran, Co. Dublin**

**Customer:
Project-Oecotop, St. Georgen, Germany**

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1 Report Data:

This report consists of 4 pages and an appendix of 2 pages.

2 Investigation

Project Oecotop GmbH & Co KG of St. Georgen, Germany, ordered an investigation of VOC emissions the house of Marcel Laskody / Pamela McDonnell at 20A, Baskin Cottages, Cloghran, Co.Dublin

3 Measurements

The Laskody / McDonnell house in Cloghran was measured for emissions of volatile organic compounds (VOC). These were measured in the air of the living room situated on the ground floor. Before the measurement the floor boards had been removed due to reconstruction work after a flood.

The air was adsorbed with an SKC Anasorb 747 molecular sieve as follows:

Sample number	280829-300
Place of measurement	Laskody / McDonnell house, Cloghran, Co. Dublin
Pump	SKC
Sample date	29 th August, 2008
Duration of sampling	100 min
Adsorbent	SKC Anasorb 747
Sampling volume [L]	100 Liter
Temperature [°C] ¹	20,4
Rel. humidity [%rh]	70,6
Air pressure [mb]	1009,8
Immission height app. [m]	App. 0,70 m
Analysis laboratory	SGS Fresenius, Dresden, Germany
No ventilation of room before measurement	> 1,5 hours
Sample taken by	Michael Obeloer

Table 1: VOC Sampling parameters

4 Analysis results

The analysis results of SGS Fresenius laboratories regarding VOC analysis are given on appendix pages 1-2.



Picture 1: VOC adsorption in the house's living room during reconstruction work

5 Discussion of results

5.1 VOC measurements

The total concentration of VOCs (TVOC) in the bedroom's air was determined to be $234 \mu\text{g}/\text{m}^3$. This value is low. Concentrations up to $300 \mu\text{g}/\text{m}^3$ do not indicate abnormalities if single substance values are evenly distributed.

The concentration of ethanol (drinking alcohol, often also found in window cleaners and disinfectants) was slightly elevated at $61,8 \mu\text{g}/\text{m}^3$ but this is of no greater concern. Similar concentrations of ethanol are often detected in many houses due to the widespread use of cleaning agents containing such alcohol.

Aldehydes, which often contribute to smells of indoor air, were found to be low at $35 \mu\text{g}/\text{m}^3$. This does not represent an abnormality.

Aromatic compounds of which some are carcinogen, were detected at a level of only $9,97 \mu\text{g}/\text{m}^3$ - a very low value compared to other houses.

Surprisingly, the emission of terpenes at $19,7 \mu\text{g}/\text{m}^3$ were measured to be very low. The house at the time of assessment was approximately one year of age and had been constructed using coniferous wood (mainly from white fir trees). Therefore, higher levels of alpha-pinene, 3-carene and a-terpinene had been expected. These expectations were not confirmed by the testing results.

Typical solvents like aromatic compounds, esters and carbonyls showed low levels in the analytical values, too. However, the house was claimed to be “toxic-free” and obviously much care had been taken not to introduce chemicals in elevated amounts during construction.

The measurements qualitatively detected some amount of methylated phenole, however, this substance could not be quantified due to the use of Anasorb adsorbent.

Korschenbroich, Sept. 18th, 2008

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Appendix

2 pages with test results

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VOC-adsorption on Anasorb 747, 100 I

Sample: 280829-300, Oecotop, Project: Laskody, Dublin

VOC-Screening - Method

All values in µg/m³

Die Messergebnisse wurden mit roten & blauen Kommentaren von POBS ergänzt

Substance / Group	Concentration	Share
Total Sum of VOC	234 bzw. 175	100,00 %
C11-Undekan	5,74	
C12-Dodekan	6,43	
C13-Tridekan	11,6	
C14-Tetradekan	21,5	
C15-Pentadekan	18,6	
C16-Hexadekan	13,3	
Sum of Aliphaten, Alkene, Cycloalk.	77,2	33,04 %
Ethanol	61,8 → 10	
1-Heptanol	1,81	
iso-Propanol	2,15	
n-Butanol	0,79	
1-Pentanol	3,64	
2-Ethyl-1-hexanol	4,81	
Sum of Alkohols	75 → 25	32,11 %
Benzol	0,77	
Toluol	3,33	
Ethylbenzol	0,27	
1.3+1.4-Xylol	1,17	
1.2-Xylol	0,36	
1.2.4-Trimethyl-benzol	3,45	
2-Ethyl-toluol	0,62	
Sum of Aromatics	9,97	4,27 %
Sum of Halogens		0,00 %
Borneol	1,92	
Myrcene	0,82	
3-Caren+alpha-Terpinen	2,20	
Limonen	6,89 → 0-2	
alpha-Pinen	7,91	
Sum of Terpenes	19,7 → 14,5	8,45 %
Sum of Phthalates		0,00 %

Die VOC-Messung wurde 16 Stunden nach Intensiv-Reinigung des Hauses durchgeführt. Der hohe Gehalt an Ethanol ist auf Reste der Reinigungsmittel zurückzuführen, die jedoch nach wenigen Tagen mehr oder weniger restlos verflüchtigt waren. Der aktuelle Wert darf als unter 10 angesehen werden.

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VOC-adsorption on Anasorb 747, 100 I

Sample: 280829-300, Oecotop, Project: Laskody, Dublin

Sum of Glycols			0,00 %
2-Butanon	1,49		
3-Pentanon	0,38		
C5-Aldehyd (Valeraldehyd)	5,32		
C6-Aldehyd (Capronaldehyd)	10,5		
Methylisobutylketon	0,21		
Benzaldehyd	1,46		
C9-Aldehyd (Perlagonaldehyd)	6,40		
C8-Aldehyd (Caprylaldehyd)	6,57		
C7-Aldehyd (Oenanthaldehyd)	3,02		
Sum of Ketone u. Aldehydes	35,4		15,14 %
Ethylacetat	1,96		
n-Butyl-acetat	1,66		
Sum of Ester	3,62		1,55 %
g-Butyrolacton	0,40		
Aceton	12,3	→ 0-7	
Sum of sonstige Carbonyls	12,7	→ 1-8	5,44 %
2-Methyl-phenol	qual. **		
Sum of Other Substances	0,00		0,00 %

Summe aller VOC: 100 %

16 Stunden nach Intensiv-Reinigung: 248

AKTUELL (geschätzt): 175

Bemerkenswert ist der für ein Holzhaus sehr geringe Gehalt an Formaldehyd, KEINE Weichmacher (Phthalate), KEINE Glykole und KEINE Halogene. Mit einem VOC GESAMT-Wert von deutlich unter 200 wird der hohe Gesundheits-Standard von 'Projekt Oekotop Häusern' nachhaltig bestätigt (für Allergiker, etc. sehr geeignet).

Übrigens, 'Projekt Oekotop Häuser' benötigen KEINE Lüftungsanlage!
 = Auch bei dem gemessenen Haus ist KEINE Lüftungsanlage o.ä. installiert.
 - Um so beeindruckender die Werte!