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Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

Scientific Opinion Paper

COM draft proposal endangers level of health protection against hazardous VOC emissions from construction products

Construction products influence indoor air quality and health

Many construction products release Volatile Organic Compounds (VOCs) to the indoor air, which are hazardous to human health. Among others, VOCs may have effects ranging from odour perception and irritation of the mucous membranes of the eyes, nose and throat to acute or systemic effects and long-term effects. This includes effects on the nervous system, allergies or allergy promotion and, in particular, cancer, gene mutations and impaired fertility.

The use of low-emission products is an important contribution to a high indoor air quality and hence the human well-being, in particular in new buildings (less ventilation due to higher energy efficiency standards) and in larger scale renovation (introduction of large amounts of construction products into a building).

Health requirements for the marketing of construction products are weak

EU harmonised product standards within the Construction Products Regulation (CPR, 305/2011) define the parameters to be described in a so-called product performance declaration. This is a pre-condition for obtaining the CE label and placing construction products on the EU market. Currently, only very few product standards include human health parameters. VOC emissions, in particular, are not addressed with the exception of formaldehyde.

Plans by the EU commission fall short of health requirements

The EU Commission is currently working out a delegated act on communication of emissions of volatile organic compounds (VOCs) from construction products in form of "VOC classes". According to the COM draft proposal (see working document AG 008-03.3) the product manufacturers

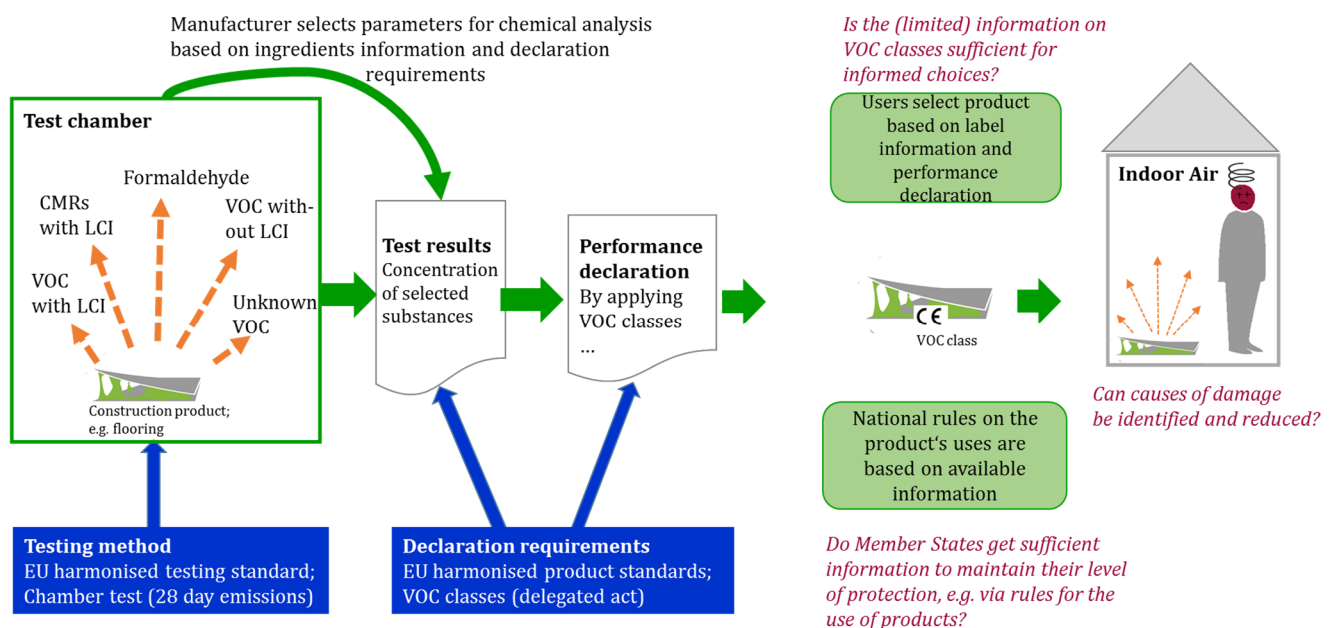
are expected to communicate a VOC class within the CE label. Three distinct parameters to assess VOC emissions are currently being discussed: lowest concentration of interest (LCI), carcinogenic, mutagenic and reprotoxic (CMRs) VOCs, and formaldehyde.

The three parameters for assessing VOC emissions in the COM draft proposal represent minimal and not sufficient requirements to evaluate health risks from construction products emissions. The resulting “VOC classes” do not allow Member States like Germany to maintain their current high standards. The German Ministry of the Environment and the German Environment Agency are concerned that the current COM draft proposal will lower existing protection standards and fail to incentivise the development of healthier construction products for indoor use.

Significant information gaps on a product’s health risks can arise if product manufacturers will not be asked to identify and communicate all health-relevant VOC emission parameters:

- national authorities will lack information to regulate the (indoor) use of construction products,
- sources of unhealthy indoor air and health damage will be harder to identify and reduce,
- construction experts will lack data to select products that ensure high indoor air standards, and
- consumers will receive vague risk information that will be inappropriate for an informed choice.

Figure 1: What would be the consequences of using the proposed VOC classes for indoor air quality?



Source: UBA (VOC: volatile organic compounds; CMR: carcinogenic, mutagenic and reprotoxic VOC; LCI: lowest concentration of interest)

How should VOC emissions be assessed?

Several parameters are currently used to assess VOC emissions from construction products in different member states:

- **LCIs:** for individual hazardous VOCs so called “Lowest Concentrations of Interest” are derived by EU experts in the EU-LCI working group. LCI indicate the threshold above which a substance could cause harm. The German authorities welcome these activities as important and profound steps towards harmonisation of requirements on construction products.
- **R-Value¹:** to take account of potentially additive effects of VOCs a risk indicator is formed based on LCIs and expected exposure levels of specific VOCs.
- **Carcinogenicity:** substances that may cause cancer are identified under chemicals legislation; due to the severity of health damage, it is considered as a separate parameter.
- **Total VOC emissions²:** the total of all VOCs emitting from a product, regardless of their identity and hazardous properties is measured. This parameter covers substances which are “unknown” (e.g. VOCs forming during the emission process or VOCs that cannot be analytically identified) as well as “not-yet assessed” VOCs (c.f. below).
- **Sum of “not-yet assessed” VOCs:** VOCs for which no specific LCI exists but which may have hazardous properties for human health.

How to find a good solution?

We see a need to include all of the above-mentioned parameters (LCIs, R-value, Carcinogens, Total VOCs and sum of “not-yet assessed” VOCs) in the definition of VOC classes. In addition, it may be useful to include more detailed VOC emission information into the declaration of performance. Detailed information on VOC emission from construction products would ensure data availability in Member States as well as informed consumer choices for low-emission products.

¹ The R-value expresses the level of risk from all substances assessed in a product that have an LCI. It is formed by adding the risk ratios (quotient of the expected exposure concentration and the LCI) for each assessed VOC in the chamber test. If the R-value exceeds the value of 1, a risk is identified.

² In addition, the total emissions of semi-volatile organic compounds (TSVOC) are used as an assessment parameter. SVOC emit less quickly but, due to the long residence time of some construction products, may lead to relevant chronic exposures in the indoor air.

Further information

[Construction Products Regulation](#) (No 305/2011): Regulation (EU) No 305/2011 of the European Parliament and of the council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC (OJ L 88/5, 4/4/2011) (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:088:0005:0043:EN:PDF>)

EU Commission, Joint Research Centre (2012): [Harmonisation framework for indoor products labelling schemes in the EU](#). Report No 27. Ispra. (<https://publications.europa.eu/en/publication-detail/-/publication/38ba1fab-f347-4545-9ccd-bb18805eb7d6>)

EU Commission, Joint Research Centre (1997): [Evaluation of VOC Emissions from Building Products](#). Report No 18. Brussels. (<https://publications.europa.eu/en/publication-detail/-/publication/0521846b-3bf1-470a-9755-fc289c7b2e51>)

EU Commission [internet site](#) with information on the EU LCI working group (https://ec.europa.eu/growth/sectors/construction/eu-lci_en)