



## Improving the quality of indoor air

Air pollution is harmful to public health, damages biodiversity and contributes to climate change. The EU has developed legislation to improve health and environmental quality. However, while significant progress has been made in improving outdoor air quality, indoor pollutants have received less attention. Given that many people spend the majority of their time indoors, research is urgently needed to enable the regulation, assessment and improvement of indoor air quality.

### **Europe's National Measurement Institutes working together**

The European Metrology Research Programme (EMRP) brings together National Measurement Institutes in 23 countries to address key measurement challenges at a European level. It supports collaborative research to ensure that measurement science meets the future needs of industry and wider society.

# Challenge

Volatile organic compounds (VOCs) are a type of organic chemical commonly found in furniture, carpets and paints used indoors. VOCs easily evaporate at room temperature into the air, and given that some are known to cause respiratory problems, the ability to reliably control exposure to VOCs is crucial to protecting public health.

The Construction Products Regulation (305/2011 EU) introduced requirements for VOC emissions labelling of construction materials, but until recently, there was no harmonised labelling scheme or supporting standard test in the EU, resulting in individual member states implementing their own testing schemes. This prevents implementation of the CE mark, which demonstrates that a product complies with EU requirements, hindering trade of construction materials across Europe.

A draft CEN standard (prEN 16516:2015) is under development, which will define a test method for the complete measurement process involved in VOC emissions labelling, from test sample to material certification. Ahead of the CEN standard's introduction by the end of 2016, testing laboratories which issue VOC emissions certificates to construction material manufacturers will need a robust VOC-emitting reference material, in order to demonstrate the traceability of their measurements and comply with the CEN standard.

# Solution

In the EMRP project *Metrology for chemical pollutants in air* (MACPoll), BAM (Bundesanstalt für Materialforschung und -prüfung) has developed a new reference material, which reproduces the VOC emitting behaviour of a typical construction product and has the required consistency, stability and transportability that previous reference materials lacked. This enables testing laboratories to validate complete VOC measurement systems in compliance with the forthcoming CEN standard for the first time.

# Impact

All testing laboratories across Europe will be able to use the new reference material to demonstrate compliance with the upcoming CEN standard and their ability to carry out robust VOC emissions measurements and certification. This marks the first step towards EU harmonisation of construction product labelling and the implementation of the CE mark for VOC emissions, which will help remove barriers to international trade and ensure reliable monitoring of indoor environments to protect public health.

As one example, eco-INITIUT performs testing of construction materials, including paints, varnishes and floor coverings, and issues VOC emissions certificates to manufacturers. As part of the project, eco-INITIUT took part in a comparison exercise organised by BAM, using the new reference material and proposed CEN test method to demonstrate the capability of their VOC emission measurement system. The results of the exercise confirmed eco-INITIUT's ability to perform traceable measurements of VOC emissions in compliance with the draft CEN standard.

eco-INITIUT is now implementing the CEN standard ahead of its formal introduction, performing traceable measurements of VOC emissions from construction materials. Manufacturers can therefore be confident in the accuracy of eco-INITIUT's measurement system, which has been benchmarked against the standard, and the emissions certificates issued for their products.

## Metrology for chemical pollutants in air

Reliable indoor and outdoor measurements of chemical pollutants in air are required to underpin and implement European air quality legislation designed to protect human health and the environment. The EMRP project *Metrology for chemical pollutants in air* made a significant contribution to fulfilling the air quality objectives of European legislation by establishing the metrological infrastructure needed to produce accurate measurements for robust short- and long-term assessment of a range of indoor and outdoor pollutants.



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### EMRP

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[www.euramet.org/project-ENV01](http://www.euramet.org/project-ENV01)

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