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*Indoor and Built Environment* 2011 20: 581

DOI: 10.1177/1420326X11431485

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# Harmonised Regulation and Labelling of Product Emissions – A New Initiative by the European Commission

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There is a need to inform and educate building designers, managers and occupiers about possible harmful effects of emissions into the indoor environment [1] and to develop indoor air quality management plans to minimise risks. This is an important part of the building environmental assessment provided by some green building certification schemes, such as Leadership in Energy and Environmental Design (LEED) and Hong Kong Building Environmental Assessment Method (HK BEAM) [2]. The development of European and international standardisation for the testing and labelling of products is a key aspect of the regulation and control of emissions of harmful chemicals [3,4] and is the basis of the present initiative.

The quality of indoor air is primarily dependent upon: (1) the amount and purity of the incoming air and (2) emissions into it from indoor sources. One key strategy for improving indoor air quality, therefore, is to control or

regulate internal emissions. This is especially important as the implementation of regulations to minimise heat (energy) loss from buildings has tended to result in lower building ventilation rates [5]. Emissions from “point sources” such as appliances and devices can be relatively easily defined and controlled, but those from more diffuse sources such as building materials are somewhat more problematic. One reason for this is the large number of sources of this type and the very wide variety of potential pollutants released. This is compounded by the lack of established exposure limits – and indeed a general paucity of knowledge – on a large number of the polluting substances released.

For this reason, there have been determined efforts in recent years to better understand the scale and nature of chemical emissions into the air from building products/materials and devise control measures to help protect the health of people potentially exposed, for example through labelling. Voluntary industry and government-based

labelling schemes were introduced in some countries during the 1990s [6] and some countries have developed specific national regulations to improve the indoor air quality by testing and labelling indoor products and furnishings. As well as these schemes, the European Commission is planning to implement Essential Requirement 3 of the Construction Products Directive (CPD) on Hygiene, Health and Environment that includes consideration of emissions to indoor air. They have mandated the European standards organisation (CEN) to undertake work to prepare a harmonised test method for determining the emission of hazardous substances from construction products. This work is now at an advanced stage. When the test method is available, there will be a need for performance levels to be agreed, and it is expected that these will be based on classes defined according to the amount of emission of volatile organic compounds.

However, there are at present, discrepancies between the various existing national schemes that have been put into place to define acceptable levels of chemical pollutants, and this has led to the European Commission establishing an important initiative specifically to harmonise the health-based evaluation of emissions from building products in the European Union (EU).

The framework for establishing harmonised criteria, set out in ECA Report No. 27 (2011) concludes that the “Lowest concentration of interest” (LCI) approach is the most feasible method for assessing the health effects of compounds from building materials. The LCI concept was first developed by the European Concerted Action Group on Indoor Air Quality and its Impact on Man when considering the best way to evaluate emissions from solid flooring materials [7]. It was defined in this document as “the lowest concentration above which, according to best professional judgement, the pollutant may have some effect on people in the indoor environment”.

The current initiative is co-ordinated by the EC’s Joint Research Centre at Ispra and integrated into the EU strategy on indoor air quality led by Directorate General for Health and Consumer Affairs. It began in earnest in June 2010 with an international workshop “Harmonised framework on indoor material labelling schemes: challenge with a global perspective” attended by about a hundred delegates including the representatives of current emission-related labelling schemes in the EU, testing labs, European Commission services in the field of indoor air quality and sustainable construction, industry, governmental organisations, standardisation bodies, non-governmental

organisations (NGOs) and representatives of other labelling schemes overseas [8].

A preparatory group comprising toxicologists and experts in emission testing and product labelling was then established to work on the development of a harmonised scheme using the LCI concept [9,10]. The principal objectives of this group are:

1. To devise a harmonised procedure for establishing a list of compounds and their associated LCI values for the evaluation of emissions from building products taking into account existing procedures used in some Member States (e.g. AFSSET, now ANSES in France [11] and AgBB in Germany [12]) and to recommend an appropriate health-protective, science-based, transparent and yet pragmatic approach.
2. To propose a flexible framework that enables future review of the procedure to take into account new knowledge (e.g. data resulting from the REACH implementation process) and revise the content of the LCI list both in terms of number of compounds and LCI values.
3. To establish LCI values (to be known as EU-LCIs) for compounds on the list.

Ultimately, this will allow voluntary and mandatory labelling schemes to evaluate product emissions in the same way using a robust health-based procedure and inform the establishment of future emission classes for CE marking under the European Construction Products Regulation (which will succeed the CPD).

At present, only volatile organic substances (VOCs) are being considered; very volatile and semi-volatile organic compounds (SVOCs) are to be addressed in the future. Nonetheless, the starting list contains more than a 100 VOCs commonly detected in emission tests of building materials and other products used indoors.

The work builds on firm foundations laid by the labelling schemes established by AgBB and ANSES that currently apply the concept of LCI values, as well as those in Finland and Denmark. The present key activity of the group is the establishment of a robust “Standard Operating Procedure” for the derivation of EU-LCIs, based on sound toxicological and risk assessment principles. The aim then is for the establishment of a formal committee comprising both experts and representatives of EU Member States to establish EU-LCI values in a programme of work that will culminate in a harmonised scheme with potential for wide application across Europe, ensuring better protection of the health of European citizens from hazardous substances in indoor materials.

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