

## Report of the event “Indoor Air Quality and its Effects on Health: a Presentation of the Guidelines for Health-Based Ventilation in Europe”



Europeans spend most of their time in indoor environments and poor indoor air quality is responsible for 2 million disability adjusted life years (DALYs) lost in European Union (EU) every year.<sup>1</sup> The European Year of Air 2013 and the expected revision of the ambient air legislation mark an appropriate moment to stress the importance of indoor air quality (IAQ) and place it in the heart of the energy efficiency strategy. The [HealthVent](#) project on the Health-Based Ventilation Guidelines for Europe was launched in 2010 under the 2<sup>nd</sup> Programme of Community Action in the Field of Health 2008-2013 with the objective of developing guidelines for health-based ventilation for non-industrial buildings in Europe taking into consideration energy efficiency requirements. To present project results, an event was organised at the European Parliament in Brussels on February 20<sup>th</sup>, 2013. The event was hosted by Mrs Catherine Stihler, Member of the European Parliament (MEP), and was coordinated by EFA’s EU Policy Officer, Ms Roberta Savli, a partner in HealthVent project along with active contributions from the other members of the HealthVent consortium.

The occasion attracted more than fifty participants. It served as a unique opportunity to learn about the project’s results for a wide variety of stakeholders, including patients’ associations, policy-makers, industry, research institutions, technology focused organisations and NGOs, who could additionally express and share their views and experiences on indoor air quality. The first half of the event consisted of plenary presentations in which the project was presented by the members of HealthVent. During the second half, the policy impacts of guidelines for health-based ventilation were discussed by two panels, one focusing on the clean air policies and the second on the energy policies.

<sup>1</sup> Final activity [report](#) of the IAIAQ project (Impact Assessment of Indoor Air Quality)

## **Need for health-based ventilation guidelines in Europe**

### ***Urgency for stricter regulation at the EU level***

**Mrs Catherine Stihler**, MEP (S&D Group, United Kingdom) initiated the discussion. She stated that breathing healthy indoor air is a *fundamental right* of citizens which should be properly regulated by the EU. However, she emphasised that no binding legislative text has been adopted on this issue so far.



***Mrs Catherine Stihler, MEP***

She consequently expressed the belief that the European Year of Air 2013 will create wonderful opportunity for considering the inclusion and integration of indoor air quality into the expected review of the EU ambient air legislation. She also emphasised

the adoption of a *Green Paper on IAQ* as being of fundamental strategic importance for the health of European citizens. The Green Paper could help with developing a coherent framework of actions to tackle the negative consequences of poor IAQ in a holistic way.

### ***IAQ improvement as part of EU Health Action plan***



***Dr. Jacques Remacle***

**Dr Jacques Remacle** of the European Commission's Executive Agency for Health and Consumers (EAHC) was the second speaker of the evening. He explained the improvement of indoor air quality was one of 13 key actions of the EU's Environment & Health Action Plan 2004-2010, which addressed environmental tobacco smoke (ETS) and other factors. After showing an overview of the 8 IAQ projects (including HealthVent) funded under the 2<sup>nd</sup> Programme of Community Action in the Field of Health 2008-2013, he presented the

activity of the Commission's Experts Group on Indoor Air Quality. This group has been working since 2006 to ensure coordination, cooperation and participation of stakeholders as well as to advise the EC on IAQ related policies and activities.

Next, **Dr Pawel Wargocki**, from the Technical University of Denmark, coordinator of the HealthVent project, welcomed the participants on behalf of the consortium members, presented the outline of the agenda and opened presentation of the HealthVent guidelines.

### ***Focus on source control***

Dr Wargocki continued with a presentation of the background and the main context of HealthVent project. He emphasized that the project is rooted on the World Health Organisation (WHO) principles on the *right to healthy indoor air*. He then iterated on the significance of indoor air exposure in the OECD – Organisation for Economic Cooperation and Development – countries, where people spend on average 90% of their time in indoor environments. After analysing the sources of indoor air pollutants (including outdoor air, building materials and products, ventilation systems, humans), he emphasised the high impact of poor air quality on Europeans' health (2 million healthy years of life are lost annually).

Then, Dr Wargocki presented the main objectives of HealthVent project, which are as follows:

1. To develop guidelines for health-based ventilation in new and existing non industrial buildings reconciling health and energy.
2. To protect EU citizens against health risks due to poor air quality as a result of deficient ventilation requirements.
3. To avoid investment and energy costs due to ventilation rates not supported by tangible benefits for health, productivity and welfare.



***Dr Pawel Wargocki***

Finally, Dr Wargocki clarified that in terms of a strategy to reduce exposure to potentially harmful pollutants indoors, ventilation should be considered the ultimate (last resort) strategy. The focus should be primarily lent to controlling the sources of air pollutants both outdoors and indoors.

## ***Ventilation rate of 4 L/s per person***

**Prof. Paolo Carrer** from the University of Milan, partner in the project, analysed previous research to determine a minimum ventilation rate which can protect health. Health-based ventilation rate is defined when, in a specific building, WHO air quality guidelines are met. Taking into consideration that CO<sub>2</sub> and moisture, being the main bio-effluents released by humans, he explained the “health-based reference minimum ventilation rate” was set at 4 L/s per person but only when WHO IAQ guidelines are fully respected and the only pollution are human bio-effluents. Therefore, in reality, where the WHO guidelines are not met rates higher than 4 L/s per person would be needed but only after making use of all possible source control measures.



*Prof. Paolo Carrer*

## ***Guidelines application***



*Prof. Eduardo de Oliveira Fernandes*

Next, coming from the University of Porto, a partner of HealthVent project, **Prof. Eduardo de Oliveira Fernandes** dealt with the application strategies for the proposed guidelines. He started from the HealthVent’s decision diagram for determining health-based ventilation levels that should apply to an individual building or space.

Prof. de Oliveira Fernandes underlined that the first step must be source control having WHO air quality guidelines as the main criteria. Starting from the building physical location consideration should then be given to the building’s construction to reduce pollution sources. The health-based reference minimum ventilation rate can only be reached with clean outdoor air and the absence of building and other indoor air pollution related sources except for those due to an occupant’s metabolism. For

existing buildings, when some sources indoors are hard to cope with by source control, a higher ventilation rate than the minimum rate of 4 L/s per person will be needed.

Only once outdoor air is not complying with WHO guidelines should ventilation systems be allowed for the air cleaning, which should be decoupled from other services requested for air, such as thermal comfort.

### ***Patients' special need for healthy indoor air***

As a representative of European Federation of Allergy and Airways Diseases Patients' Associations (EFA), **Mrs Marie-Louise Luther** of Swedish Asthma and Allergy Association presented the patients' perspective from the unique position of Ombudsman on indoor environment in Sweden; there are no other comparable positions in the rest of Europe. Mrs Luther emphasised the fact that good IAQ is beneficial for everyone but it is particularly important for patients with allergies, asthma and other respiratory diseases.

After presenting testimonies from patients whose conditions worsened due to inefficiency of ventilation or poor indoor air quality, she listed the following recommendations based on patients' experience and best practices collected from around Europe:

- ✓ Minimum distance between houses, schools etc. and industry, roads with high volumes of traffic, biofuels, etc.
- ✓ Reduced ventilation during unoccupied periods instead of turning ventilation on and off periodically.
- ✓ Well filtered air.
- ✓ Proper operation and maintenance.
- ✓ No ozone or re-circulated air, especially no smoking.
- ✓ Better IAQ with separate heating and ventilation systems.
- ✓ Regulations on chemicals emitted from building materials.
- ✓ No fragrance or scents added to air in public buildings.



*Mrs Marie-Louise Luther*

Finally, Mrs Luther expressed that the patients expect the EU Year of Air 2013 will be a chance to revise EU ambient air legislation with the consideration that outdoor air and indoor air are treated as the "same air."

## Impact of health-based ventilation guidelines

Next, the discussion was opened for further comments from two panels that dealt with the impacts of guidelines for health-based ventilation on air and energy policies. The panels consisted of short presentations by panellists followed by interaction with the audience, which had the chance to raise questions and submit their comments on the presented guidelines.

### *Impact on clean air policies*

The first panel, moderated by Dr Otto Hänninen of Finnish National Institute for Health and Welfare, partner in the HealthVent project, discussed the impact of health-based ventilation guidelines on policies related to clean air.



*Dr Otto Hänninen*

Dr Hänninen opened the discussion presenting the ambition of the guidelines to halve the burden to Europeans' health caused by poor indoor air quality.



*From left: Dr Stylianos Kephelopoulos, Dr Michal Krzyzanowski, Ms Anne Stauffer*

The first panellist was former Head of the WHO European Centre for Environment and Health, a collaborative partner of the HealthVent project, **Dr Michal Krzyzanowski**, who was previously responsible for WHO Air Quality and IAQ Guidelines. Dr Krzyzanowski mentioned the importance of WHO guidelines defining key conditions for healthy air. He welcomed the fact that the WHO guidelines are integrated into the HealthVent project. He suggested that the next step is to efficiently put them into practice, defining the role of each of the many stakeholders responsible for healthy indoor air.

**Dr Stylianos Kephelopoulos** from DG Joint Research Centre's Institute for Health and Consumer Protection, collaborative partner in the HealthVent project, mentioned the

different initiatives which take place at EU level in the framework of Europe 2020 Strategy for smart, sustainable and inclusive growth and the discussions around Horizon 2020, the EU's programme on research and innovation for the coming decade. At the forefront of the key and challenging issue is the alignment of criteria and requirements of cross-cutting policies related to the built environment. More specifically, Dr Kephelopoulos emphasised the importance of implementing within EU the harmonisation frameworks recently developed by the European Commission in tandem with the Member States and other stakeholders. These frameworks concern indoor air monitoring (PILOT INDOOR AIR MONIT), testing, health-based evaluation (EU-LCI) and labelling of chemical emissions from construction material and products (ECA reports no. 27 and 29). In addition, holistic concepts developed by EnVIE and HealthVent projects should be considered as well and integrate the WHO guidelines.



As the final speaker of this panel, **Ms Anne Stauffer**, Deputy Director of Health and Environment Alliance, called attention to the highly important fact that the discussion was taking place inside the European Parliament, which she noted should be the “obvious” venue for such discussions. She explained that it is high time that all the actions taking place regarding IAQ are turned into policies by being included in the political and legal documents, such as the newly proposed 7<sup>th</sup> Environment Action Programme.

### ***Impact on energy policies***

The second panel was led by **Prof. Francis Allard** from the University of La Rochelle, another HealthVent partner. The panel addressed the relationship between ventilation and energy efficiency, and therefore, the impact of health-based ventilation guidelines on energy policies. While presenting the background points, Prof. Allard mentioned the increasing efforts concerning the energy efficiency of buildings at EU level in contrast to the low level of legislation regarding ventilation characterized by the lack of coherence among EU Member States.

First speaker in this panel, **Dr Vitor Leal**, representing the University of Porto partnering in HealthVent, explained that the proposed health-based ventilation guidelines are convergent with energy efficiency. The decrease of ventilation rates enabled by the effective source control would allow potential savings between one-

third and half of the future energy demand for heating, cooling and moving the air.

Although the focus is on source control, Dr Leal suggested that there are technical solutions provided by sophisticated systems, which allow the reduction of building's energy demands even in the cases that source control is not achieved; however, the issues of cost and cultural compatibility in some geographical contexts should also be considered. Finally, he added that it is important to introduce IAQ maintenance and operation procedures in the Energy Performance of Buildings Directive (EPBD) requiring regular audits.



*From left: Dr Vitor Leal, Prof. Francis Allard, Prof. Servando Alvarez*

The last panellist, **Prof. Servando Alvarez** from the University of Seville, presented a case study of the newly launched ventilation regulation in Spain revealing the importance of harmonising legislations regarding energy efficiency and ventilation needs of buildings.



An open discussion followed with the participants from the audience raising questions and making comments to panellists. More issues were put on the table, such as the importance of daylight and comfort when constructing healthy buildings and the cases of renovation of buildings, which should respect the subjected guidelines; the proper location of the building was again emphasized. Furthermore, the eco-design directive was mentioned, and it was indicated that it should focus not only on energy issues, but also include IAQ criteria. All in all, there was a common understanding among the participants that further policy actions on IAQ must be taken. The necessity was again recognised for the European Commission to issue a *Green Paper on IAQ* with maximum urgency. In this perspective, all relevant Directorate-Generals of the European Commission dealing with the topic of indoor air quality, such as DG Energy (ENER), DG Environment (ENV), DG Health & Consumers (SANCO), DG Enterprise & Industry (ENTR), DG Research & Innovation (RTD) and Joint Research Centre (JRC) should be contacted to convey the



important outcome of the HealthVent project. All mentioned DGs should be invited to undertake initiatives along the recommendations made during the present event and described in the following.



## Conclusions and Policy Recommendations

During the presentation of the HealthVent guidelines and subsequent discussions the common view was that the guidelines must be the starting point for further initiatives aimed at integrating IAQ-related health evidence in all existing and future policies. Two key points were identified and promoted:

(a) Focus should be on reducing the generation and dispersion of indoor air pollution primarily by controlling pollutants at source level.

(b) The cross-fertilisation across existing policies at both EU and Member States. This includes the integration of HealthVent guidelines so that public health benefits can be secured.

Concrete examples of HealthVent recommendations include:

- In the framework of the EU Year of Air 2013, and of the expected revision of the EU air legislation, both indoor and outdoor pollution should be tackled upon and integrated, as well as the WHO guidelines enforced.
- Banning of tobacco smoking in all public places to protect people from exposure to second hand smoke.
- Green Paper on IAQ should be urgently prepared as a cross-cutting issue including health, environment, energy, climate change, research and single market.
- The currently developed 7<sup>th</sup> Environment Action Programme should put more emphasis on air quality and provide the basis for further action on IAQ by 2020.
- Coordinated actions should be launched towards both outdoor and indoor air on the principle that it is the “same air” that affects human health.



## Acknowledgements

The presentation of HealthVent guidelines in the European Parliament would not have been a success without the support and kind hosting of Mrs Catherine Stihler. Furthermore, the event was organised with the valuable contributions of the HealthVent consortium partners who attended the event and especially the coordinator of the project, Dr Pawel Wargocki. Last but not least, EFA specially thanks the presenters, the members of the two panels and the audience for the fruitful discussion, ideas and recommendations.

The report was prepared by EFA staff and Dr Wargocki with kind input from HealthVent Speakers and the invited Panellists at the event.

## Further Information

Details about HealthVent project can be found on the following website:

<http://www.healthvent.eu>

All presentations given at the event can be downloaded as PDF files via the [EFA's website](#) at:

<http://www.efanet.org/presentations/>

Photographs from the event were taken by Mr David Brennan, EFA. They are available to the public for viewing on a Dropbox online gallery, here: <http://goo.gl/nurXp>

For further information on HealthVent Project, please

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