



HealthVent and IAQ under the Second Programme of Community Action in the Field of Health

Jacques REMACLE

Head of Health Unit

European Commission

Executive Agency for Health and Consumers



EU Environnement & Health Action Plan

In 2004, the Commission adopted the EU Environment and Health Action plan with 13 Key actions

Action 12: Improvement of indoor air quality:

- Addressing environmental tobacco smoke (ETS)
- Developing networks and guidelines on other factors affecting indoor air quality



Action 12: Improve indoor air quality

" The Commission intends to develop work on improving indoor air quality. This integrates complex indoor exposures including addressing environmental tobacco smoke by building on existing public health and employment policy (this should be supplemented by actions to be taken in the context of environmental policy). Action related to environmental tobacco smoke is particularly important given the extent of the evidence supporting a negative health impact of exposure. Actions here would directly build on Article 8 of the Framework Convention of Tobacco Control, and 4 of the December 2002 Council Recommendation on Smoking Prevention and Tobacco Control. This includes:

Encouraging the restriction of smoking in all workplaces by exploring both legal mechanisms and health promotion initiatives at both European and Member State level. At European level extension of the Carcinogens Directive may provide the basis for a legal mechanism given the growing international consensus that ETS be classified as a class 1 carcinogen.

Working together with Member State competent authorities and other organisations to achieve full implementation and enforcement of existing legislation. Developing networks and guidelines on other factors affecting indoor air quality (dampness/mould, building materials, indoor effects of outdoor emissions and their health implications) by using research results and exchange of national best practice."



IAQ under the Second Public Health Programme

Bruxelles

Action	EC Contribution	End date
BUMA	579,045,63	31/03/2009
Healthy Air	249,613,00	31/03/2010
GERIE	598,944,00	01/12/2010
HESEINT	600,000,00	31/08/2011
EPHECT	749,829,83	31/05/2013
HealthVent	449,992,50	28/02/2013 (extended)
RADPAR	750,000,50	06/05/2012
IAIAQ	79,256,00	16/08/2010



IAIAQ Data:

Total burden of Disease attributable to indoor air quality is estimated to be 3% of the Burden of Disease

This corresponds to 2 million years of healthy life lost annually in the EU

HealthVent Event Feb 20, 2013, Bruxelles

IAQ EXPERT GROUP

To build up Member State and stakeholders participation

To set effective intergovernmental coordination and cooperation

To advise on future European Commission activities

Healthier + Evict Fed 2013, Bruxelles



Thank you for your attention !

**MORE INFORMATION ON THE
INDIVIDUAL ACTIONS:**

**[HTTP://EC.EUROPA.EU/EAHC
/PROJECTS/DATABASE.HTML](http://ec.europa.eu/eahc/projects/database.html)**

Health event Feb 7-9, 2013, Bruxelles

GUIDELINES FOR HEALTH-BASED VENTILATION

Rationale-Principles-
Implications

www.healthvent.eu

HealthVent Event, European Parliament, Brussels, February 20, 2013

Welcome on behalf of HealthVent

- Technical University of Denmark, coordinator
- Friedrich-Schiller-University Jena
- University of Milan
- Association Asthma
- European Federation of Allergy and Airways Diseases Association
- National Institute of Health and Welfare, Helsinki
- Faculty of Engineering, University of Porto
- National and Kapodistrian University of Athens
- University of La Rochelle
- (Sintef Energy AS)
- REHVA
- Joint Research Centre, Ispra (collaborating partner)
- WHO, Office in Bonn (collaborating partner)

Outline

- Background and Context
- Health Evidence
- Holistic Approach and Application Strategies
- Patient's Perspective on the Need for IAQ
- Panel Discussions on the Impacts of Guidelines on Clean Air and Energy Policies
- Outlook into the Future
- Closing Remarks

www.healthvent.eu
healthvent@healthvent.eu

GUIDELINES FOR HEALTH-BASED VENTILATION

Background and Context

Pawel Wargocki

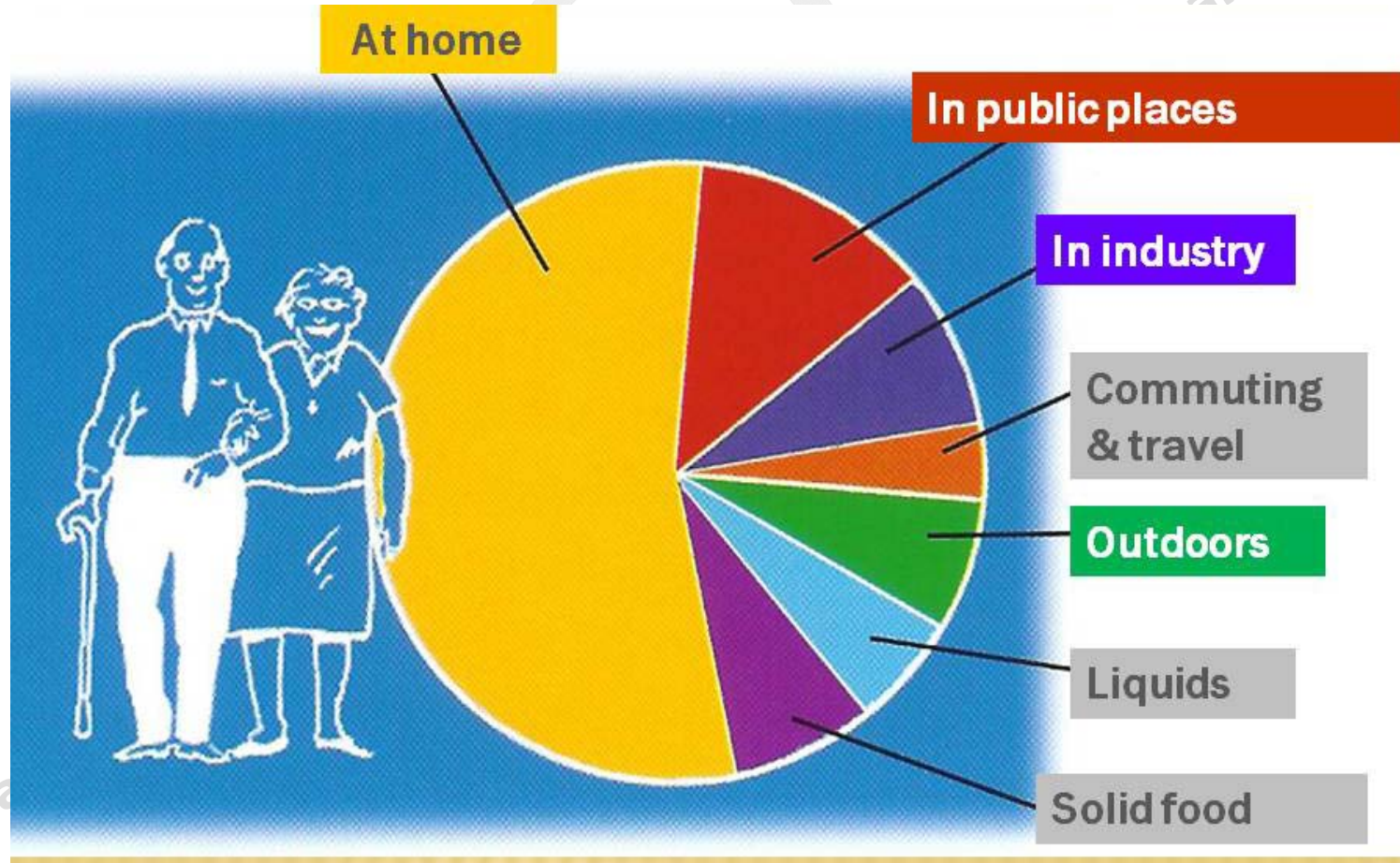
Technical University of Denmark

HealthVent Event, European Parliament, Brussels, February 20, 2013

The Right to Healthy Indoor Air (WHO, 2000)

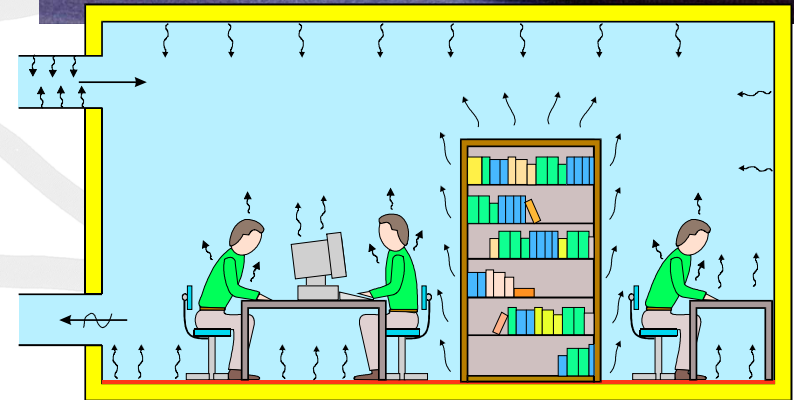
- P1. Under the principle of the human right to health, **everyone has the right to breathe healthy indoor air.**
- P2. Under the principle of respect for autonomy (self-determination), everyone has the right to adequate information about potentially harmful exposures, **and to be provided with effective means for controlling at least part of their indoor exposures.**
- P3. Under the principle of non-maleficence (doing no harm), **no agent at a concentration that exposes any occupant to an unnecessary health risk should be introduced into indoor air.**
- P4. Under the principle of beneficence (doing good), **all individuals, groups and organisations associated with a building, whether private, public or governmental, bear responsibility to advocate or work for acceptable air quality for the occupants.**
- P5. Under the principle of social justice, the socio-economic status of occupants should have no bearing on their access to healthy indoor air, but health status may determine special needs for some groups.
- P6. Under the principle of accountability, all relevant organisations should establish explicit criteria for evaluating and assessing building air quality and its impacts on the health of the population and on the environment.
- P7. Under the precautionary principle, where there is **a risk of harmful indoor air exposure, the presence of uncertainty shall not be used as a reason for postponing cost-effective measures to prevent such exposure.**
- P8. Under the “polluter-pays” principle, the polluter is accountable for any harm to health and for welfare resulting from unhealthy indoor air exposures. In addition, the polluter is responsible for mitigation and remediation.
- P9. Under the principle of sustainability, **health and environmental concerns cannot be separated, and the provision of healthy indoor air should not compromise global or local ecological integrity, or the rights of future generations.**

Indoor air is significant contributor to life-time exposures

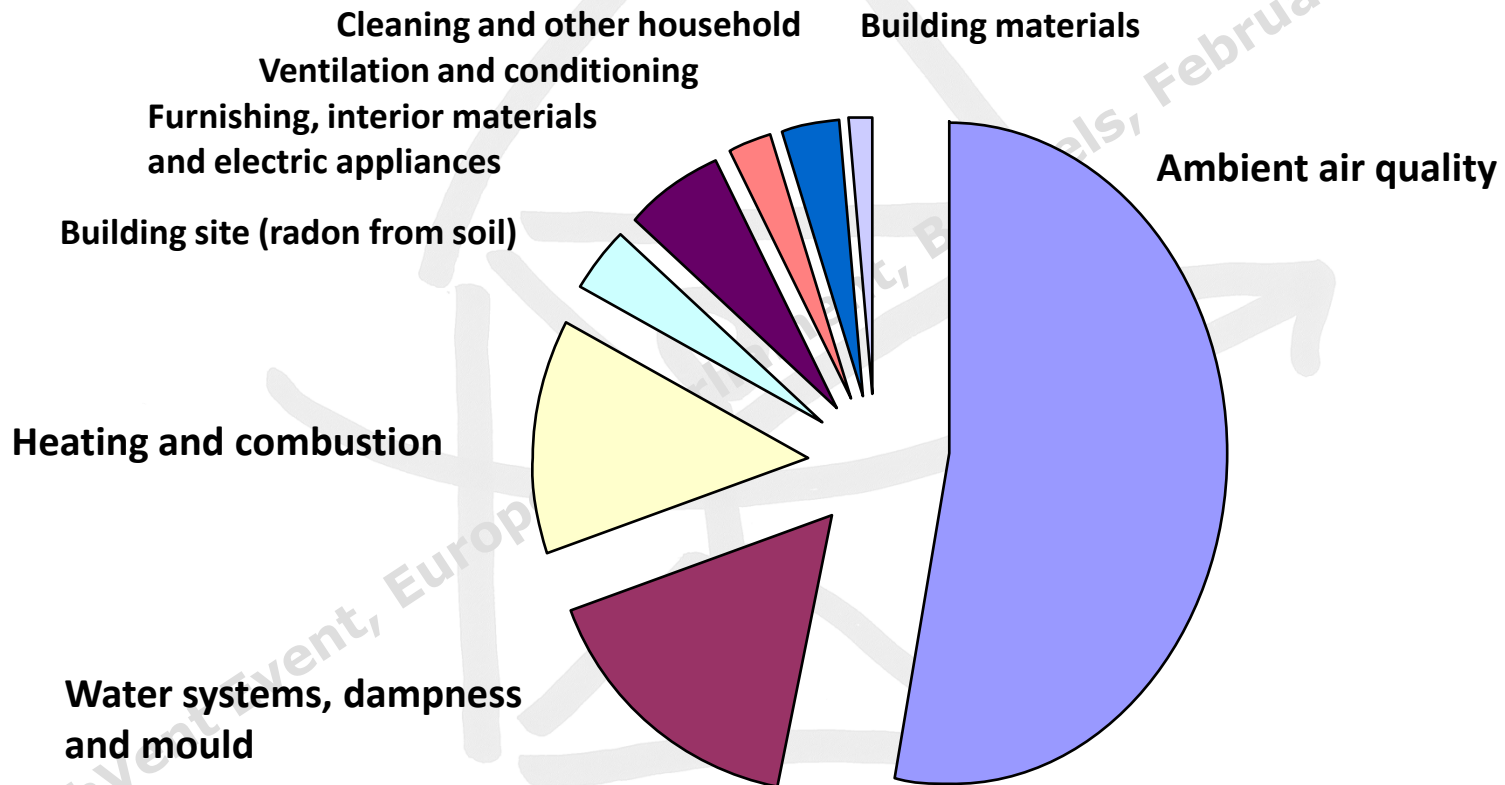


Sources of Indoor Air Pollutants

- Outdoor air: combustion, industrial pollution, traffic, pollens, etc.
- Building: building materials, furnishing, equipment, consumer products, etc.
- Ventilation system: ventilation, air-conditioning
- Humans: occupants & their activities



2,000,000 Healthy Life Years are Lost every year due to Exposure Indoors in EU



ETS excluded!

Source: EnVIE Project (2009)

Strategic priorities to control exposures (EnVie, 2009)

- Policies re. energy efficiency, building materials, products and maintenance
- Policies re. the impact of outdoor environment
- Policies re. specific building construction and equipment

Developing health-based ventilation guidelines to control exposure to pollutants

(reduce lost healthy life years by 1/3)

35 Ventilation Standards in EN, mostly re. Technical Aspects

Purpose of EN standard	Building type	
	Residential	Non residential
Criteria for indoor environment	EN 15251:2007	
Design and dimensioning of ventilation systems	CEN/TR 14788:2006	EN 13779:2007
Determining performance criteria of residential ventilation systems	EN 15665:2009	
Calculation of ventilation rates	EN 13465:2004	EN 15242:2007
Calculation of ventilation energy	EN 15241:2007	
Rating and performance characteristics	prEN 13142 Rev V7 on components/products for residential ventilation	EN 13052:2006 on air <u>handling</u> units
Performance testing of components and products	EN 13141-1 /air transfer devices EN 13141-2 /exh. & supply air terminal devices EN 13141-4 /fans EN 13141-5 /cowls and roof outlets EN 13141-6 /exh. ventilation system packages EN 13141-7 /mech. supply & exh. units + HR for dwellings EN 13141-8 /mech. supply & exh. units + HR for rooms EN 13141-9 /ext. mounted RV-controlled air transf. device EN 13141-10 /hum. controlled extract air terminal device	EN 1886:2007 /Mech. performance air handling units ISO 5801:1997 /Industrial fans performance testing ISO 12248 /Ind. fans tolerances & conversion methods ISO 5221 /Acoustics, in duct radiated sound power level ISO 5213 /Acoustics, casing radiated sound power level EN 1751 /Aerodynamic testing of dampers & valves EN 1216 /Performance testing heating/cooling coils EN 779 /Determination of filtration performance EN 308 / Performance testing air-to-air HR-devices

Current Ventilation Standards =DILUTION Standards

- Ventilation rates based on sensory comfort (different classes of comfort), not based on health criteria
- Requirements are defined for different classes of building users (visitors and occupants) and modified based on the strength of pollution sources (classes of building materials)
- Ventilation rates not defined on target values for exposures
- There are no (formal) requirements for air used for ventilation (ambient air assumed to be clean) and for compliance with the requirements in the standard

HealthVent Project: Health-based Ventilation Guidelines for EU

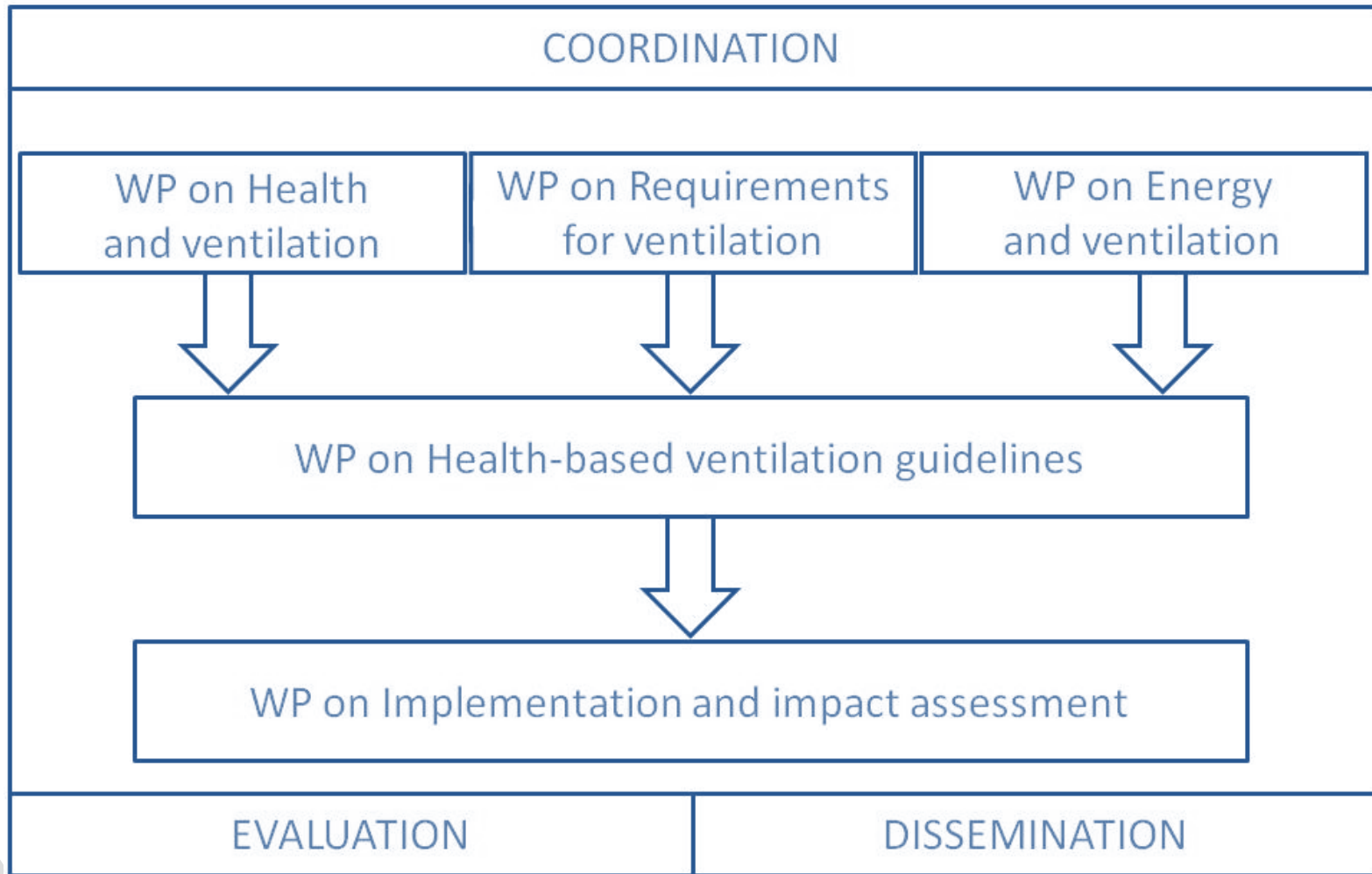
- Funded in the framework of the Second Programme of Community Action in the Field of Health (2008-2013), European Commission – Directorate General for Health and Consumers
- July 1, 2010 to March 31, 2013
- €495,000 (total €750,707)
- Based on experience, findings and recommendations of EnVie, IAIAQ, WHO Air Quality Guidelines and other relevant projects in the field of IAQ and health
- 11 partners, multidisciplinary team of experts from medicine, engineering, indoor air sciences, exposure and risk assessment, energy, ventilation practices and patients groups

Main Objectives

- To develop health-based ventilation guidelines for new and existing non-industrial buildings (offices, homes and public buildings schools, nurseries and day-care centres) reconciling health and energy
- To protect EU citizens against health risks due to poor indoor air quality as a results of deficient ventilation requirements (ventilation rates, strategies and practices)
- To avoid investment and energy cost due to operation of ventilation systems at ventilation rates that are not supported by tangible benefits for health, productivity and welfare

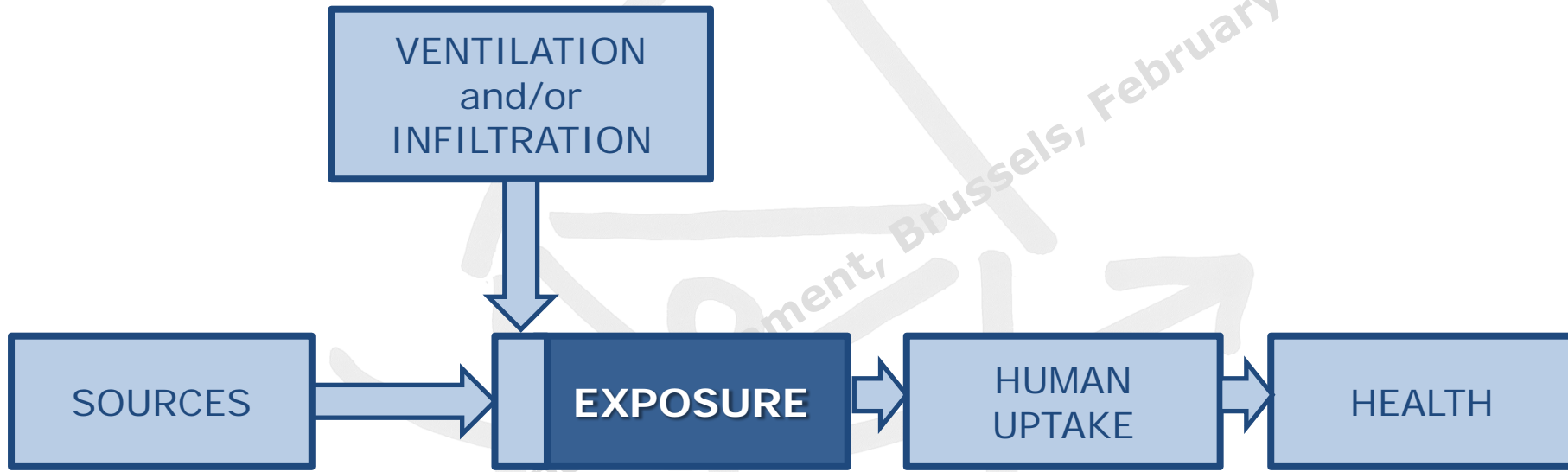
Project Structure

2013



H

Health-Exposure-Ventilation



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HealthVent Prerequisites

- The priority is given to source control outdoor and indoor.
- Ventilation is the ultimate (last resort) strategy.
- Exposure must respect WHO guidelines.

Guidelines for Health-Based Ventilation

Health Evidence

Paolo Carrer, University of Milan

Brussels, February 20th, 2013

HealthVent Event, European Parliament, Brussels, February 20, 2013

HealthVent Approach for Health Evidence

Definition of the "*minimum ventilation rate*" protecting health by:

- Previous projects in the field of indoor air quality and health (eg. EnVIE, EuroVen, IAIAQ), on-going development of Indoor Air Quality Guidelines by WHO, and of all other projects relevant to the topic.
- Review of the scientific literature.
- CO₂ and humidity modelling in the context of the ventilation requirements needed to cope with this approach.

WHO guidelines for air quality are the scientific 'state of the art' leading to the criteria to manage AQ indoors as well as outdoors

Pollutant	Indoor Air Quality Guidelines		Air Guidelines	
	IAQ WHO (2010)	INDEX (2005)	AQ WHO (2000)	AQ WHO (2005)
CO (mg/m ³)	100 (15 m)	100 (15 m)	100 (15 m)	
	60 (30 m)	60 (30 m)	60 (30 m)	
	30 (1 h)	30 (1 h)	30 (1 h)	
	10 (8 h)	10 (8 h)	10 (8 h)	
	7 (24 h)			
NO₂ (µg/m ³)	200 (1 h)	200 (1 h)	200 (1 h)	200 (1 h)
	40 (1 y)	40 (1 w)	40 (1 y)	40 (1 y)
SO₂ (µg/m ³)			500 (10 m)	500 (10 m)
			125 (24 h)	20 (24 h)
PM10 (µg/m ³)				50 (24 h)
				20 (1 y)
PM2.5 (µg/m ³)				25 (24 h)
				10 (1 y)
OZONE (µg/m ³)				100 (8 h)
RADON (Bq/m ³)	No safe level Reference level: 100 Not more than: 300			

Pollutant	Indoor Air Quality Guidelines		Air Guidelines	
	IAQ WHO (2010)	INDEX (2005)	AQ WHO (2000)	
Benzene ($\mu\text{g}/\text{m}^3$)	No safe level	No safe level Not more than outdoor level	UR 6×10^{-6}	
Trichloroethylene ($\mu\text{g}/\text{m}^3$)	No safe level		UR 4.3×10^{-7}	
Tetrachloroethylene ($\mu\text{g}/\text{m}^3$)	250 (1 y)		250 (1 y) 8000 (30 m)	
Toluene ($\mu\text{g}/\text{m}^3$)		300	260 (1 w) 1000 (30 m)	
Styrene ($\mu\text{g}/\text{m}^3$)		250	260 (1 w) 70 (30 m)	
Xylenes ($\mu\text{g}/\text{m}^3$)		200		
Formaldehyde ($\mu\text{g}/\text{m}^3$)	100 (30 m)	30 (30 m)	100 (30 m)	
Naphtalene ($\mu\text{g}/\text{m}^3$)	10 (1 y)			
PAHs	No safe level		8.7×10^{-5} per ng/m^3 of B[a]P.	

HealthVent Approach for Health Evidence

Review of the scientific literature

The **scientific literature** has been reviewed in the context of ventilation and its impact on health and on exposures affecting health, examining whether it provides information on the association between health and ventilation for the **definition of the “*minimum ventilation rate*”** protecting health.

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Literature search methodology

Literature search between 2001 and 2011

- Databases: MEDLINE by National Library of Medicine, Toxnet, Web of Science;
- Proceedings of Indoor Air and Healthy Building congresses

Categories of search included:

- **Indoor environments:** private homes, offices, public building, schools.
- **Health** (in accordance with WHO definition): asthma and allergy, communicable diseases, lung cancer, chronic obstructive pulmonary disease, cardiovascular disease; moreover sick building syndrome symptoms, perceived air quality, short term sick leave, productivity.
- **Ventilation:** no designed ventilation, designed natural ventilation, mechanical ventilation, ventilation integrated with air conditioning.
- **Indoor related health risk factors:** NO_x, PM, CO, VOCs, combustion particles, indoor chemistry products, mineral fibres, allergens, dampness, moulds, dust mites, bioaerosols, bacteria, viruses, noise, microclimate parameters.

Lowest ventilation levels protecting Health - Summary

HEALTH ENDPOINT	HOME	OFFICE	SCHOOL
Asthma and allergic symptoms	0,37 - 0,32 ach (corresponding to <u>7 L/s x p</u>)	-	-
Respiratory symptoms	-	-	-
Airborne infectious diseases	No quantitative, health-based guideline values or thresholds can be recommended for acceptable levels of contamination by microorganisms. Association between a weekly average CO2 differential concentration greater than approximately 100 ppm and the probability of detecting airborne rhinovirus (Office)		
SBS symptoms	> 0,4 ACH protect (> 8 L/s x p)	> 9 L/s x p (< 20% of prevalence of SBS symptoms)	From 7 L/s x p to 10 L/s x p no change on SBS symptoms but increased perceived air quality
Annual sick leave	-	> 12 L/s-person reduction annual sick leave (1.2-1.9 days per person per year) .	- Every 4 L/s x p corresponds to 10-20% change in school absence rates (1 L/s x p ~ 2.5-5%)
Performance	-	≥ 15 L/s x p are likely to reduce potentially negative effects on performance	≥ 5 L/s x p are likely to reduce potentially negative effects on performance
	7 L/s x p	9 L/s x p	8 L/s x p

Lowest ventilation levels protecting Health

Not possible to generalize these “rates” and use them to define health-based ventilation rates:

- the reviewed studies examined only the effects of ventilation on the short-term (acute) health effects, and therefore potentially important long-term health effects or the exposure to pollutants causing long-term health effects were not assessed;
- lack of proper characterization of exposures in the reviewed studies, indoor and outdoor air quality;
- most of the studies lacked proper ventilation measurements, either with direct methods or using proxies;
- in the investigated buildings not all potential source control methods were in place to reduce subsequent exposures.

HealthVent Approach for Health Evidence

CO2 and Humidity modelling

The "*minimum reference ventilation rate*" was defined for the condition in which the only source of pollution are human occupation emitting bio-effluents.

In this approach the impact of CO2 and humidity was modelled in the context of the ventilation requirements.

HealthVent Approach for Health Evidence

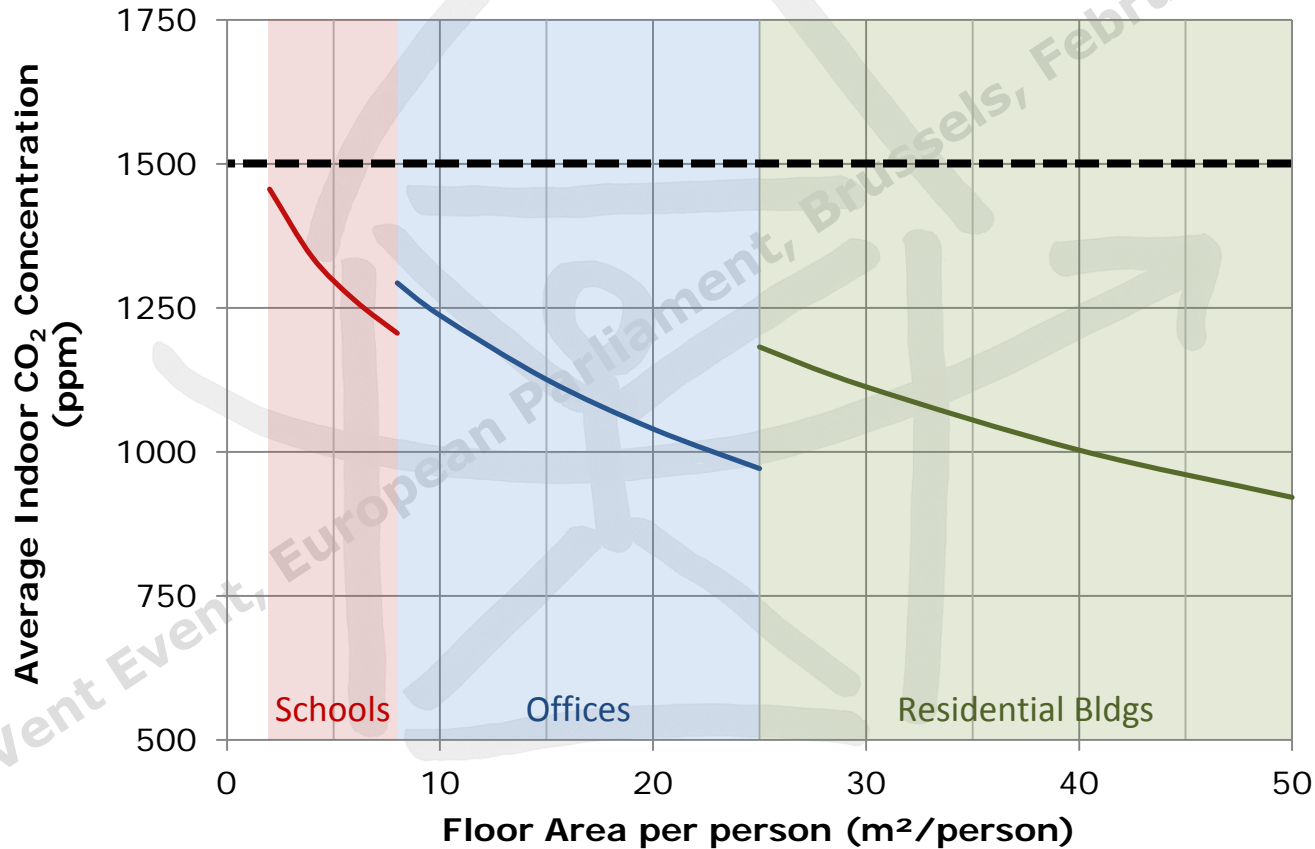
CO₂

Bio-effluents generated by the occupants of which released CO₂ is a proxy, as a function of their metabolism, the density of occupation, and the thermal indoor environment conditions.

When all pollution sources are controlled, average concentrations between 1000 to 1500 ppm have been found several times as acceptable from a health point of view by renowned authorities and scientific publications.

HealthVent Approach for Health Evidence

Average CO₂ concentrations for typical occupation periods in several building typologies when ventilating at 4 L/s per person



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HealthVent Approach for Health Evidence

CO₂

For typical buildings and activities, occupation density and metabolic rates, **4 L/s per person** could be sufficient for adequate indoor air quality when considering the release of CO₂ as a proxy for all other bio-effluents to meet widely accepted recommended average levels of CO₂ in different standards around the world.

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HealthVent Approach for Health Evidence

Humidity due to human metabolism

Ventilation rates of **4 L/s per person** is sufficient in the heating season to keep humidity at levels which would prevent **mould growth** and avoid **house dust mites** effectively.

The increase of ventilation rates during periods of higher outdoor humidity is ineffective, sometimes counterproductive; **different measures** – e.g. time relatedness of ventilation and if necessary drying of outdoor or indoor air – have to be applied.

Conclusions

The “**health-based ventilation rate**” in a specific building is met when WHO guidelines are respected, through an integrated preventive approach combining source control measures and health-based ventilation practices.

4 L/s per person is the “**health-based reference minimum ventilation rate**” defined on the base of the IAQ status due to the occupants pollution load in the absence of other indoor and outdoor sources.

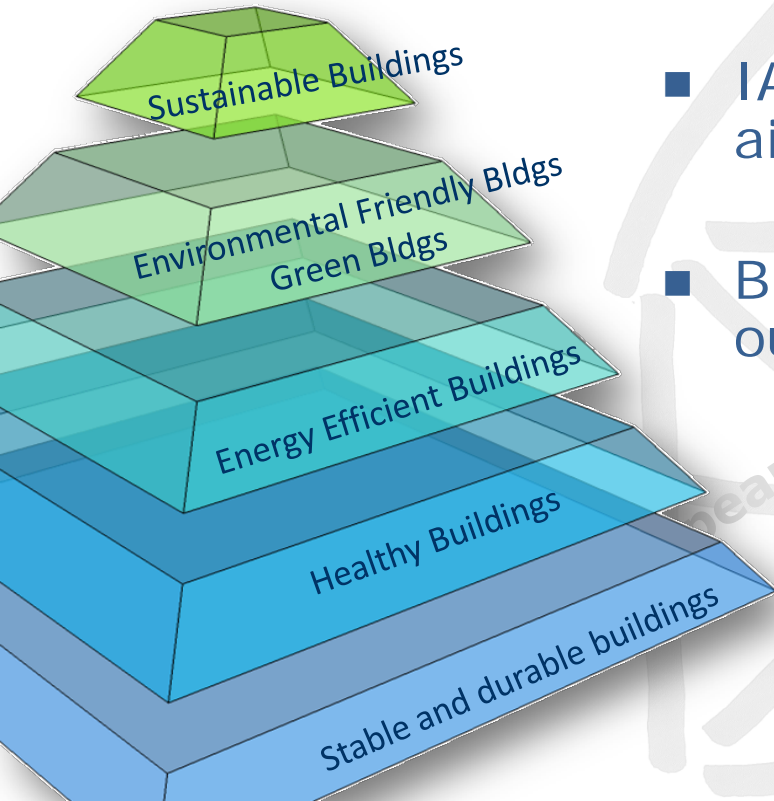
The “health-based reference minimum ventilation rate” is a **basic ventilation rate** indicating that in reality no values lower than this level are admitted, thereby stating a **reference** that only can be exceeded when defining for each case the **appropriate ventilation rate**.

Guidelines for Health-Based Ventilation

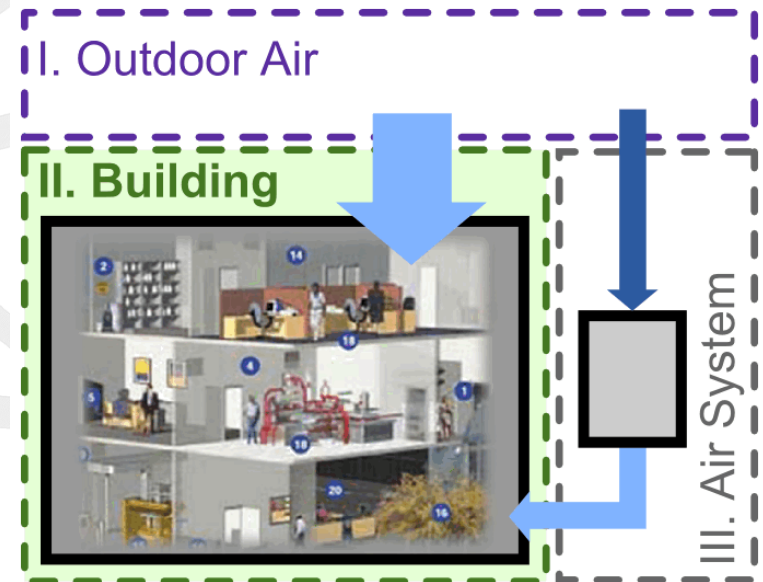
Holistic Approach and Application Strategies

Eduardo de Oliveira Fernandes, IDMEC–FEUP
Brussels, February 20th, 2013

Building as an "air system"*



- Buildings must be healthy!
- IAQ is as much determined by outdoor air quality as well as by indoor sources
- Buildings as shelters/frontiers with outdoor air



* Or 'cluster' of air systems (spaces)

Vision & Two Strategies

■ Vision:

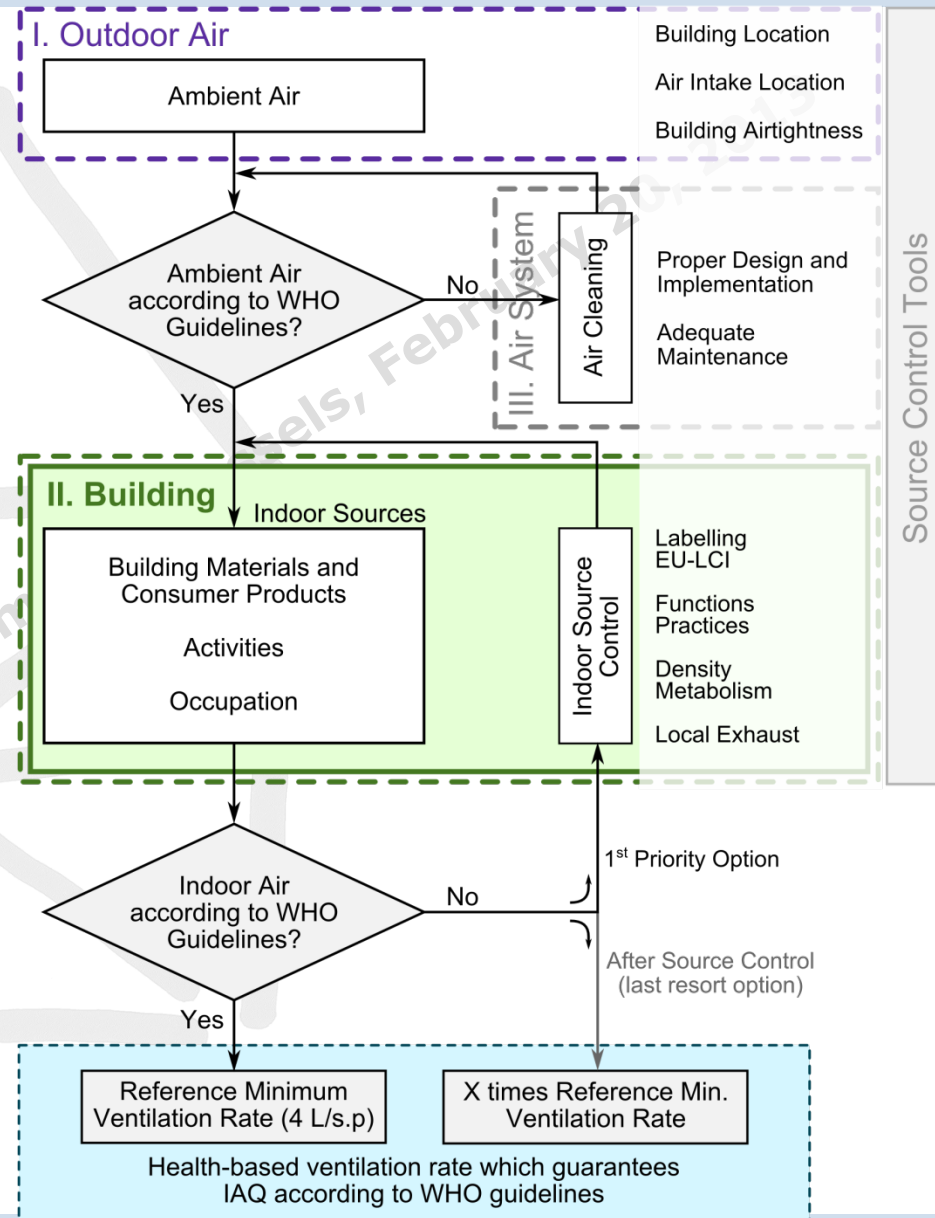
- **Holistic Approach from Health to Policy** (*making healthy bdgs to happen and being operated*)

■ Two Strategies:

- **Source Control**, to be given first priority at all levels (*from the choice of the city and building location in the city; through the building design and materials specifications; to the management, use and maintenance*).
- **Ventilation**, as the last resort for exposure control indoors (*to be based on the human occupancy and adjusted when source control is not enough; and to be decoupled from other indoor environmental services such as heating/cooling*).

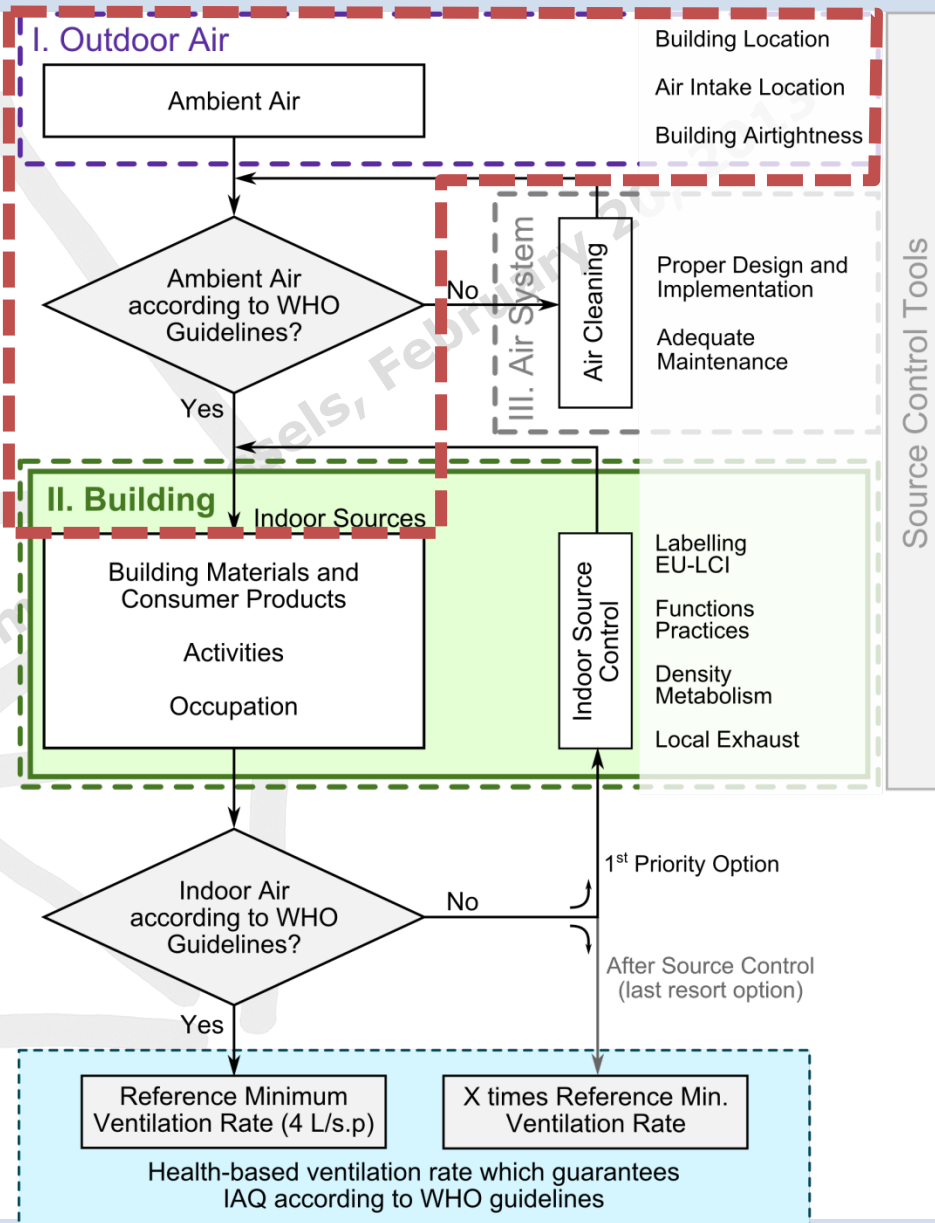
HealthVent's Decision Diagram (1)

- Starting from the recognition of two basic 'air systems' (I & II) and an additional one to be treated as a 'prosthesis' (III).
- This diagram allows to identify opportunities for **source control** and establish if and how the health based **"Reference Minimum Ventilation Rate"** (4 L/s per person) can and/or shall be used.



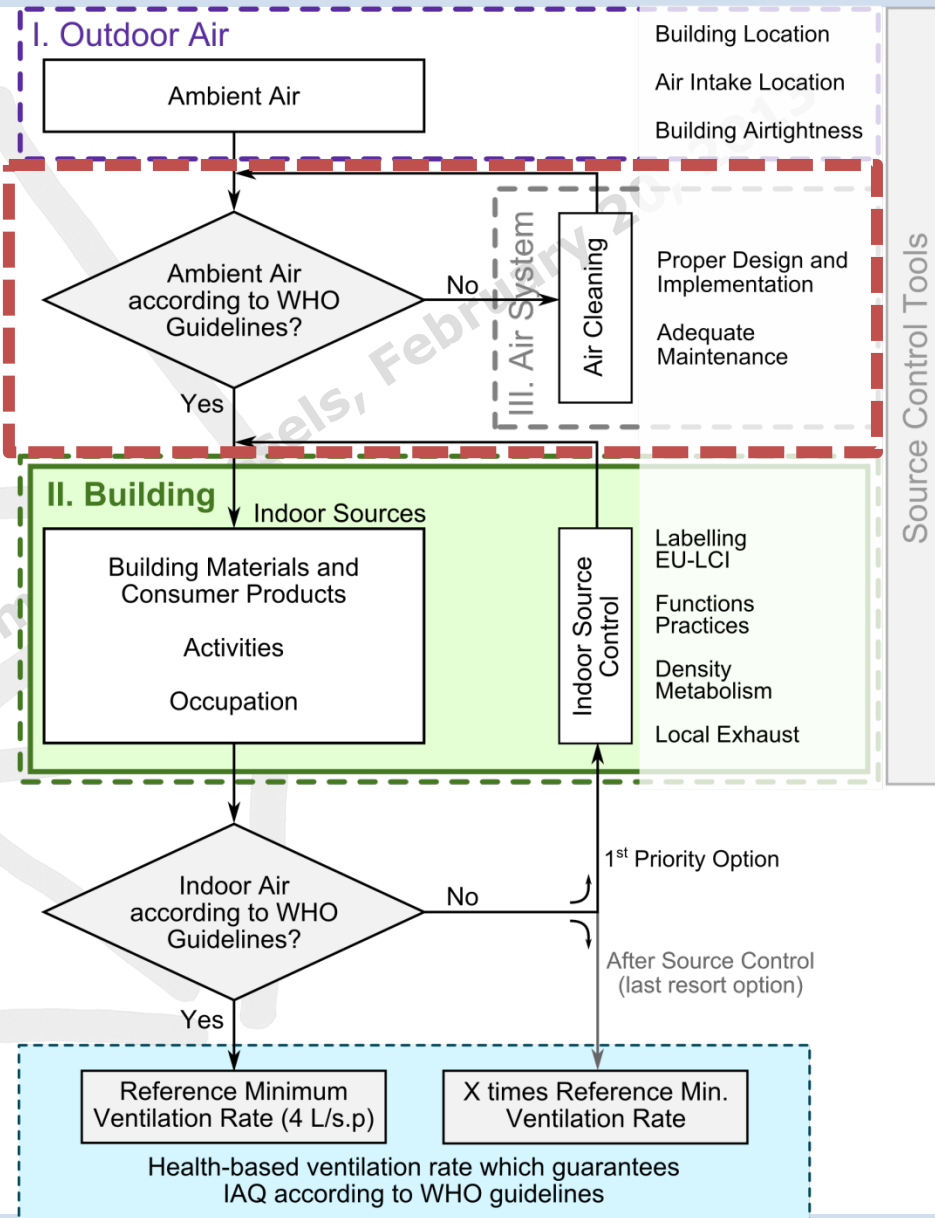
HealthVent's Decision Diagram (2)

- Air going into the building should respect the WHO Air Quality Guidelines *(unavoidable pressure on outdoor source control – cities!)*.
- For a given city, building location, air intake location and airtightness can help minimize uptake of outdoor pollutants.



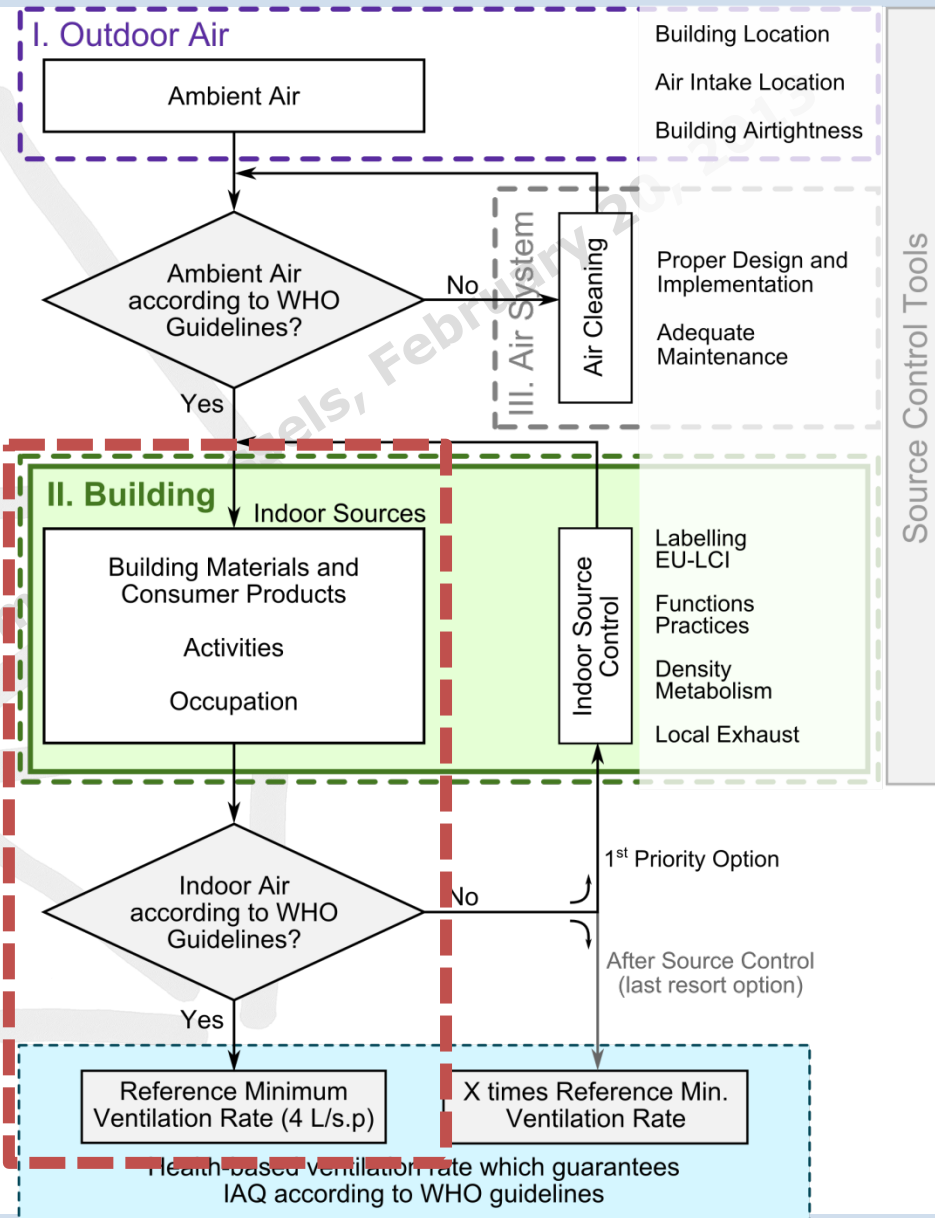
HealthVent's Decision Diagram (3)

- If outdoor air does not respect WHO guidelines, air cleaning might be needed.
- There is the need to guarantee proper design, implementation and maintenance of ventilation system. The latter is not seen as part of the building. It is just a 'prosthesis' to help the city to perform well regarding the bldg. So, it must be treated as such, i.e., as being able to deliver proper outdoor air.



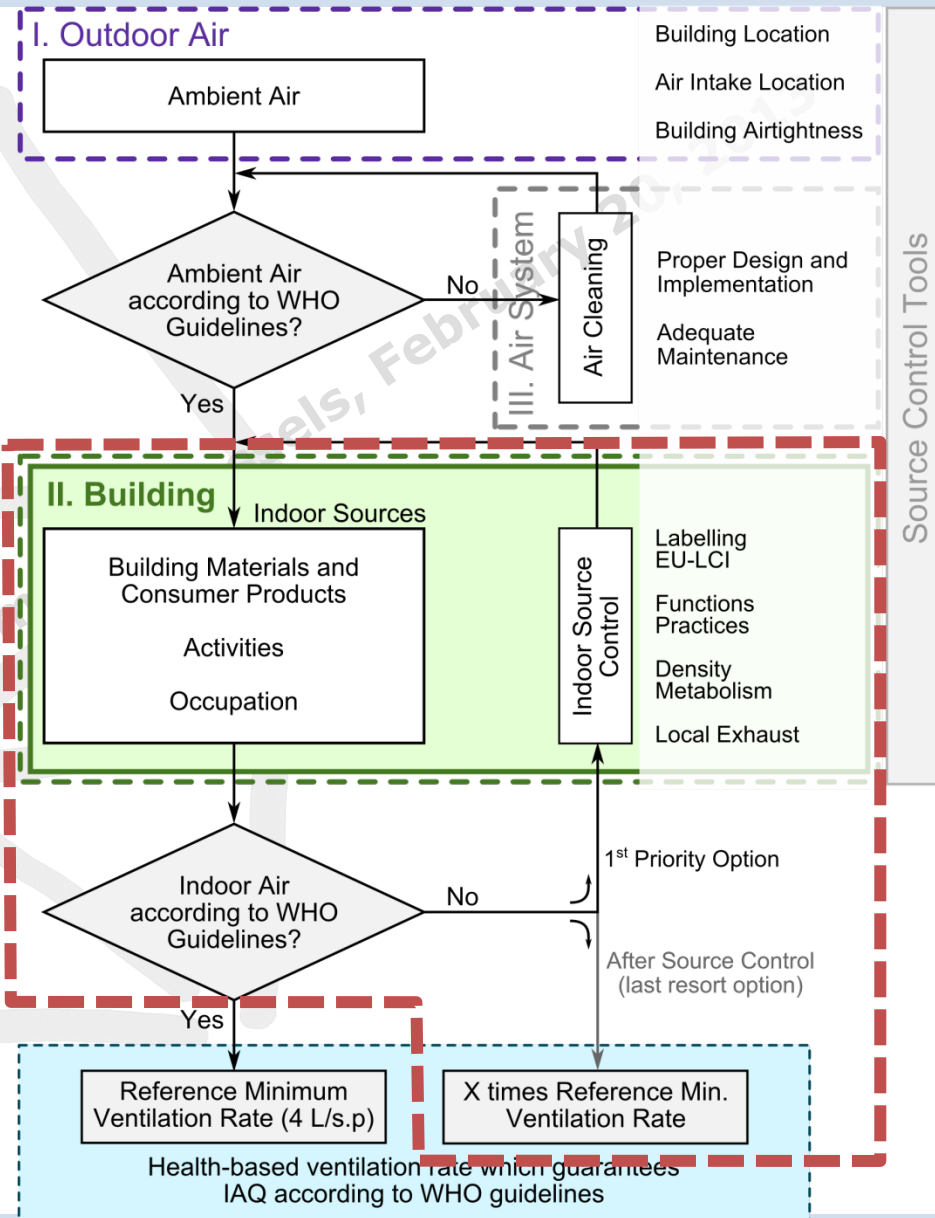
HealthVent's Decision Diagram (4)

- Inside the building, air might be still subject to pollutants from indoor sources.
- If all sources in the building (materials, consumer products, activities) are controlled to keep adequate (WHO) IAQ indoors then:
 - Humans become the only source to be controlled through the "Reference Minimum Ventilation Rate"



HealthVent's Decision Diagram (5)

- If IAQ does not respect the WHO guidelines, then indoor source control must be further explored at the building level.
- But, if IAQ still does not respect the WHO guidelines, then increasing a health-based ventilation above the 'reference minimum' may be needed (*formally expressed as a multiplying of the RMVR*).



Conclusions (1)

- Outdoor air is a main source of pollution also indoors. Air represents a bigger exposure burden and health threat indoors than outdoors.
- WHO guidelines for air quality are the scientific 'state of the art' leading to the criteria to manage AQ indoors as well as outdoors.
- Source control is recognized as the priority strategy to control exposure so its potential shall be explored first.

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Conclusions (2)

- The health-based "*reference minimum ventilation rate*" is a basic ventilation rate level

while
- The appropriate health-based ventilation rate for a specific building is expressed by a formal multiplying factor of the *health-based "reference minimum ventilation rate"* not lower than one
- The value of 4 L/s.person has been for quite some years already referred to as a value for ventilation rate in several standards, namely in EU (EN15251) and USA (ASHRAE).

Outcomes from HealthVent

- A rational approach for IAQ starts from source control (ambient air, building, activities)
- A clarification of health protection as the specific role of ventilation
- For the first time ventilation regulations can be based on and justified by health criteria
- A health-based 'reference minimum ventilation level', referred to human sources (4 L/s per person) is stated
- The devaluation of ACH as a metrics for ventilation
- The decoupling of ventilation needs vs energy needs for thermal comfort
- New avenues towards better and/or less energy use in buildings

Policy implications and needs for research

- Development of harmonized common regulation in Europe on product labeling and ventilation
- Integration of IAQ issues and accounting of its impacts in the revision of Ambient Air Directive
- Value has to be given to IAQ and its auditing in future recast of EPBD and in revisions of ventilation standards and regulations
- Need for new European guidelines on proper scope, design, constr., maintenance and inspections of ventilation systems
- Development of cross-cutting criteria for energy requirements decoupling ventilation for IAQ objectives and thermal comfort strategies
- EU policies promoting sustainable buildings to take into account the variations of outdoor and indoor sources

January 20, 2013



HealthVent Event

Thank you!

PATIENTS' PERSPECTIVE ON THE NEED FOR HEALTHY INDOOR AIR

Marie-Louise Luther
Ombudsman indoor environment
Swedish Asthma and Allergy Association

European Federation of Allergy and Airways
Diseases Patients' Associations (EFA)

Why is good IAQ important?

Asthma, bronchitis or allergy

Sensory hyperreactivity (SHR)

Sensitive to particles, gases, scents, emissions of chemicals (trigger factors)

Building-related symptoms (SBS)

Pollution as:

- Gases
- Particles
- Volatile organic compounds (VOC)

Patients' testimonies

Asthma and Allergy Association (SWEDEN)

- Mother to boy with asthma – worse at school
- Decision: turn off ventilation systems in all schools and nurseries at nights/weekends (6 pm-6 am)
- Health and Environment office – CO₂ measures ok
- Lack of clear guidelines!
Turning off ventilation systems to save energy

Risks:

- Change of pressure – pollution from construction
- Microorganisms grow in damp filters
- Total risk, ex poor cleaning and damp buildings

Patients' testimonies

20, 2013

(THE NETHERLANDS)

- Joanna Bottema – Astmafonds
- Important to change view about indoor and outdoor air quality, awareness increasing indoors (smoking prohibited - public buildings)
- Worrying trends; fragrances used in public places (department stores, hotels, restaurants, offices), long-lasting – disaster for asthma, forced to leave
- EFA Book on Respiratory Allergies: Raise Awareness, Relieve the Burden – <http://www.efanet.org/>

Health

Best practices and examples

HSB FTX, advantages (SWEDEN):

- Incoming air is filtrated and heated by earth heat before ventilation system with heat exchanger (at summer air is chilled)
- Save 97% of energy by HSB FTX compared to conventional (80-85%)
- Separate ventilation and heating system

Regulations on compulsory inspection of ventilation systems (OVK) since 1991

Sites: www.omboende.se Swedish National Board of Housing, Building and Planning www.svenskventilation.se Ventilation industry www.allergironden.se Swedish Asthma and Allergy Association

Best practices and examples

FINLAND

- Finnish Pulmonary Association (FPA) and Allergy and Asthma Federation have a joint "Indoor Air Quality and Renovation" advice service
- Day care centre Histamine
- FPA offer healthy housing to patients

Leaflets:

- IAQ <http://www.allergia.fi> and <http://www.hengitysliitto.fi>
- How to find help for indoor air quality and mould problems <http://www.allergia.fi>

Best practices and examples

ITALY

- FEDERASMA cooperated with Italian Ministry of Health, providing patients' perspective, by participating to GARD Italy (Global Alliance against Chronic Respiratory Diseases – MoH body) Working Groups which issued the following documents:
 - 2010: "Guidelines for preventing in schools indoor hazard factors for allergies and asthma" which became a State-Regions Agreement <http://www.trovanorme.salute.gov.it>
 - 2012: "Air Quality in Schools and Hazard for Respiratory and Allergic Diseases – Cognitive Picture on Italian Situation and Prevention Strategies" <http://www.salute.gov.it>

Patients' experiences to consider

Distance between dwellings, schools etc and industry, big roads, biofuels etc

Reduced ventilation, not turn off

Filtrated air good, operation and maintenance important

No ozone or recirculated air, non smoking

At least 0,5 airch/h in dwellings

Better with separate heating and ventilation

Regulations on building materials (chemicals/emissions)

No fragrance or scents added to air in public buildings

EFA recommendations

Outdoor and indoor air is basically the “**same air**”

- Banning of smoke in all public places to protect people from **second hand smoke**
- In the framework of the **EU Year of Air** and of the **revision of the EU air legislation**, both indoor and outdoor pollution should be tackled and **WHO guidelines** enforced
- **Green Paper on IAQ** as a **cross-cutting** issue (health, environment, energy, climate change, research and single market)

HEALTHVENT Final Event
Brussels, 2013-02-20

Indoor Air Quality and its Effects on Health:
Guidelines for Health-Based Ventilation in Europe

Impact of Health-based Ventilation Guidelines

on Policies Related to
Ambient and Indoor Air Quality

HealthVent Event, European Parliament, Brussels, February 20, 2013

Panelists

20, 2013



Michal Krzyzanowski, former WHO



Stylianos Kephelopoulos, DG JRC



Anne Stauffer, HEAL



Michal Krzyzanowski

Michal Krzyzanowski retired last year from the position of Head of the WHO European Centre for Environment and Health in Bonn, belonging to the WHO Regional Office for Europe.

His technical work focused on the preparation of scientific evidence on health impact of environmental hazards, in particular of air pollution. The global update to the WHO Air Quality Guidelines as well as a series of Indoor Air Quality Guidelines are the products of his team.

He is still active as a freelance consultant.



Stylianos Kephelopoulos

Dr Stylianos Kephelopoulos is the policy support interface for environment and health issues of the Chemical Assessment Unit of the DG Joint Research Centre's Institute for Health & Consumer Protection.

He is coordinator of the long-standing and widely recognized European Collaborative Action on "Urban Air, Indoor Environment and Human Exposure" (ECA) and led the development of three indoor air related EU harmonisation frameworks (1. indoor products labelling schemes; 2. indoor air monitoring; 3. health-based evaluation of construction products indoor emissions EU-LCI).

In his capacity as EC scientific officer the last 20 years he has contributed significantly to the indoor air quality research and related policies in Europe.



Anne Stauffer

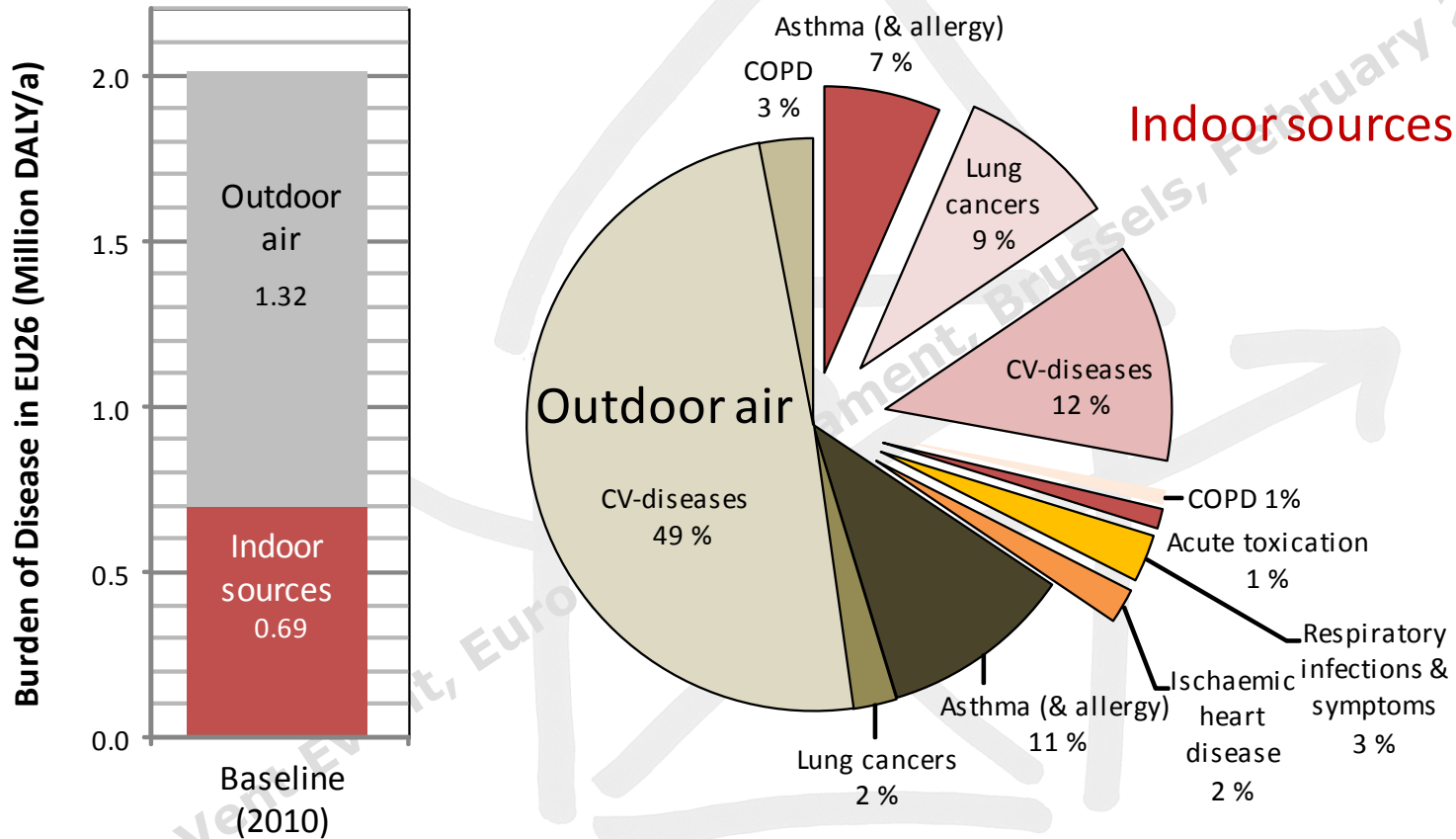
Anne Stauffer is currently the Deputy Director of Health and Environment Alliance (HEAL), located in Brussels.

HEAL is a leading European not-for-profit organisation addressing how the environment affects health in the European Union. HEAL brings together over 65 member organisations and evaluates how policy changes can help to protect health and enhance people's quality of life. Indoor air quality has been a cornerstone of HEAL's work since its founding 10 years ago.

Background

- Importance of air quality for health is becoming more and more evident
- Indoor air quality is associated with a significant burden of disease in all European countries
- Ventilation guidelines propose to reduce this burden by almost 1 million healthy life-years annually in EU26

Burden of disease due to IAQ



Source: Hänninen, Asikainen *et al.*, 2013; HEALTHVENT Report D8

Figure 1. Burden of disease at the baseline (2010) in EU-26 divided into indoor and outdoor source components (left) and fractions associated with different diseases (right).

Reduction potential of the BoD

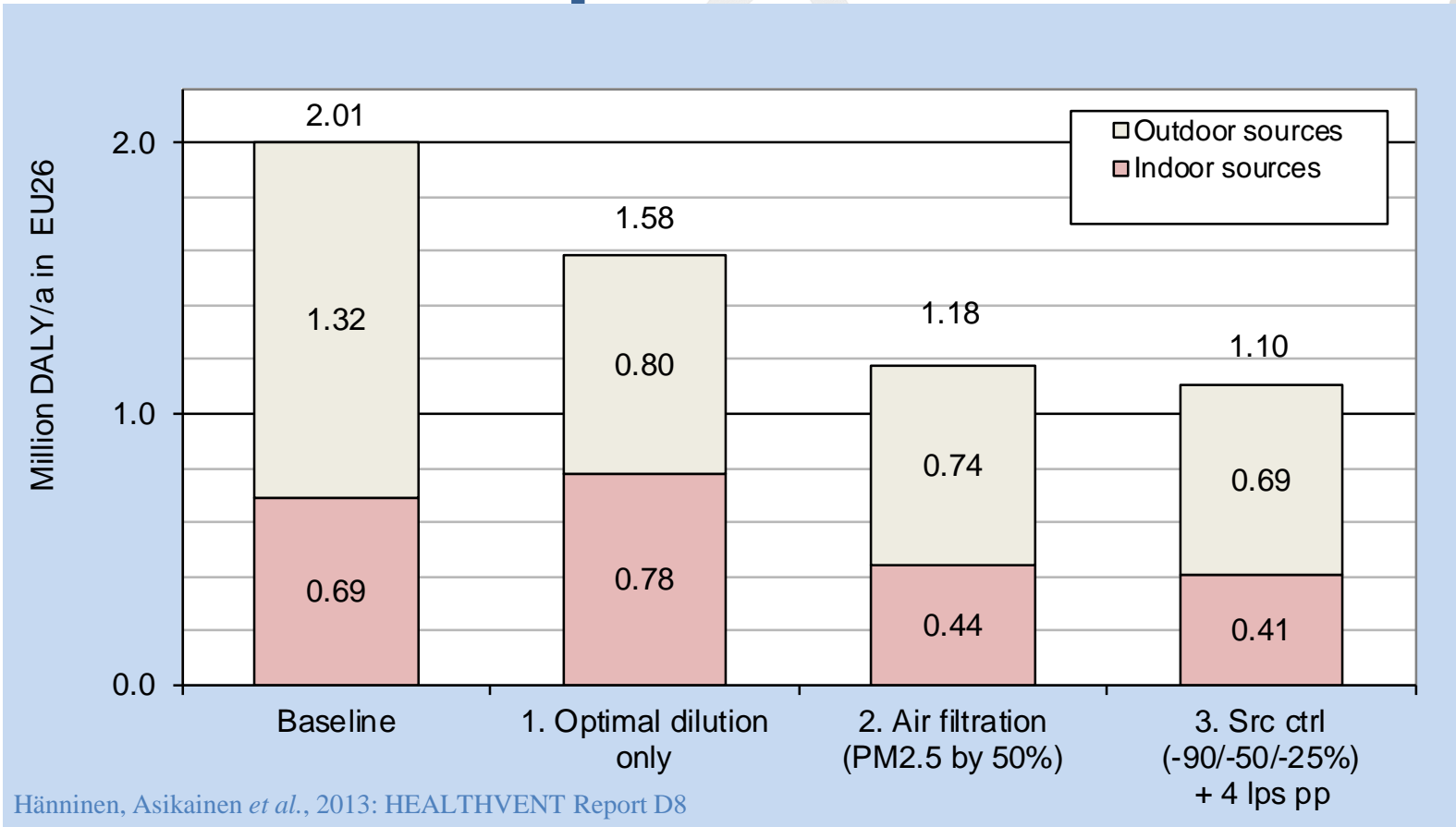
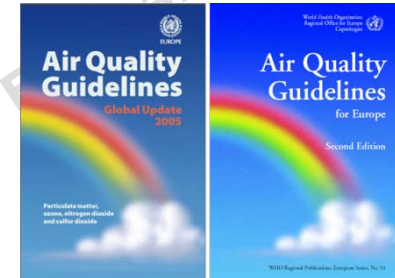


Figure 1. Burden of disease at the baseline (2010) in comparison with alternative potential ventilation guideline definitions in EU-26 (in millions of healthy lifeyears lost).

Panel discussion

Ambient and indoor AQ policies

- Ambient air quality
 - CAFE 2008/50/EC Directive
 - WHO Guidelines (2005)
 - Significance of the health effects
 - Scientific evidence
- Indoor air quality (examples)
 - EPBD 2002/91/EC
 - Gas appliances D 90/396/EEC
 - Construction Products Regulation 305/2011 (CPR)
 - EU Ecolabel
 - WHO Guidelines for IAQ (2009, 2010)
- Building codes and ventilation standards
 - EN15251
 - Need for European harmonization
- Integration of various policies
- Need for additional legislation on IAQ?
- Protection of health & quality of life



WHO, 2006

WHO, 2000



WHO, 2010

WHO, 2009

HEALTHVENT Final Event
Brussels, 2013-02-20

Indoor Air Quality and its Effects on Health:
Guidelines for Health-Based Ventilation in Europe

Impact of Health-based Ventilation Guidelines

on Policies Related to Energy

HealthVent Event, European Parliament, Brussels, February 20, 2013

Panelists



Vitor Leal
(Univ. Porto)



Servando Alvarez
(Univ. Sevilla)

HealthVent Event, Parliament, Brussels, February 20, 2013



Vitor Leal

- Vitor Leal is Professor at University of Porto.
- His technical work focuses on energy efficiency in buildings and energy planning
- In our Healthvent project, Vitor was the Chairman of WP6: Energy Impacts.

HealthVent Event, European Parliament, Brussels, February 20, 2013



Servando Alvarez

- Servando Alvarez is Professor at University of Sevilla.
- His scientific background focuses on energy efficiency in buildings and urban environment.
- He has been coordinating all work related to building performances in the Spanish regulation frame “Calificación Energética de Viviendas (CEV)”

Background

- Strong effort in Europe on Energy Efficiency of Buildings (EPBD 2002, EPBD recast)
- Poor quality of our ventilation regulations
- Ventilation guidelines propose a common platform of a coherent approach of ventilation regulation

Panel discussion

- Ventilation is also a sensitive aspect of building energy efficiency
- These guidelines should fit in a common European approach.
- Need for European harmonization.
- Integration in national regulations

HealthVent Event, European Parliament, Brussels, February 20, 2013

Guidelines for Health-Based Ventilation

Outlook into the future

HealthVent Event, European Parliament, Brussels, February 20, 2013