



Editorial

Pests in housing and the risks to health

The dwelling, be it a house or apartment, is the physical structure in which it should be possible to establish a home. The home is the social cultural and economic structure created by the household, a refuge from the outside world. Any intrusion of external factors or stressors such as pests strongly limits the psychosocial feeling of safety, intimacy and control, and inhibits the mental and social function of the home. Additionally, pests in and around the home are more than a mere nuisance but can pose a risk to health. Furthermore, global trade, urban sprawl, and changes to the climate make the spread of pests and pest-borne diseases increasingly likely, and about 75% of emerging infectious diseases are of animal origin.

It is difficult to assess the environmental burden of disease attributable to pests in housing, because there is a lack of data, not helped by a common problem of misdiagnosis of the conditions. It is rare for the medical professions to consider pests as the source of the infection other than in occupational exposures. More effective surveillance mechanisms for identifying the contribution of many pests to the spread of disease are needed. Poor health often results from poor living environments, and rodent infestations in particular are associated with poor environments. So it is likely that those lower down the social gradient of health, and whose health status may already be compromised, are more likely also to be living in closer proximity to pests.

The WHO LARES survey (Large Analysis and Review of European housing and health Status) found that 60 % of the dwellings in eight cities had been infected by at least one pest in the previous year. Bedbugs (*Cimex lectularius*)

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(and there appears an increasing problem of these pests), lice and fleas which all feed on humans can impact on the mental wellbeing of the sufferer even if they do not directly transmit disease. The LARES study showed a clear association between pest-infested premises, depression, migraines, allergies and asthma. When cockroaches are present in a dwelling, residents are over three times more likely to suffer headaches.

Norway rat infestations (*Rattus norvegicus*), in particular, are an indication of a degraded environment and studies show an association of rat and house mouse (*Mus musculus*) infestations with:

- Older housing in poor condition
- Multi-occupied buildings and housing at high density
- Ageing and damaged infrastructure e.g. drainage
- Poor environment – litter, dereliction, neighbourhoods of social deprivation etc.

The LARES study found that presence of rats and mice within a dwelling could trigger psycho/social stresses on people of all ages and backgrounds. Studies have found that the presence of rodents in the home may contribute to

increased levels of indoor allergens causing allergic asthma and rhinoconjunctivitis.

The range of parasites and zoonotic agents infecting rodents has been found to be greater than previously recognised and are reservoirs of more diseases than thought until recently. Indeed, while bubonic plague and leptospirosis (Weil's disease) are the diseases most commonly associated with rats, it has been shown that rats can also be infected with a range of helminths, that can be transmitted to humans via contaminated environments for example *Capillaria spp.* that cause Capillariasis, and *Trichuris spp.* that causing diarrhoeal disease. Bacteria such as *Coxiella burnetii* (causing Q fever), and *Yersinia enterocolitica*, that causes Yersiniosis have also been identified in rats. Rats may also play a role in the transmission of the protozoan *Toxoplasma gondii*. Research has shown that rats exhibit behavioural changes when infected with the organism whose definitive host is the cat. The infection makes them more susceptible to predation by cats making transmission to cats more likely, potentially increasing the risk of transmission to humans. House mice can also be infected with the protozoan. Hantavirus (HTV) is one of the recently discovered etiological agents of acute viral haemorrhagic fever and is one of the most well-known viral diseases transmitted to humans from rodents. House mice are known to transmit lymphocytic choriomeningitis (LCM) caused by an arenavirus, and more recently, LCM virus has been isolated from wild Norway rats.

The prevalence of the difference of the organisms appears to vary with the rodent population being studied. For rats, population dynamics appear to be an influence on the prevalence rates of zoonotic agents. Studies suggest

where there is higher level of predation in urban areas (from pest control and domestic animals), the population density is lower and the prevalence is generally lower than on farms where population densities are greater. If the control efforts by the municipal authorities, owners or managers, depend on complaints, then such rundown neighbourhoods may be those where people do not complain. Inadequate levels of rodent control could then lead to an increase in the prevalence of zoonotic agents within the rodent population, further enhancing risk to the health of those already likely to have lower health status. The effects of climate change on populations are uncertain, but milder winters will reduce death rates, and it is known that increased flooding from heavy rainfall events increases surface rat infestations.

Even if the prevalence rates are lower than on farms, rats in urban areas rodents are living in closer proximity to the human population than rural rats, thus increasing the risk of contamination of the domestic environment and transmission of disease. Synanthropic rodents clearly pose a risk to public health, and their presence demands a high level of personal hygiene. However if housing and economic conditions are poor so that good personal hygiene is difficult to achieve the risks are increased. While traditionally rodent control has been about reducing damage to crops and buildings (economic damage), increasingly in developed countries the concern is about risks to public health.

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Health impacts of indoor vermins

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Small, hardly visible and hidden living unwanted pests can occasionally be found in a household. They generally do not have a negative impact on human health. However, there are also those that quite possibly harm human health and the well-being. In this context we distinguish between the categories of material pests, storage pests and hygiene pests. The following article will examine these categories providing an example for each category.

Material pests: Dust and book lice (*Psocoptera*)

Dust and book lice (picture 1) are among the most important material pests. These insects are harmless, usually wingless inhabitants of damp dwellings. The high humidity in the dwelling can be a result of renovation and/or inadequate ventilation. Under these conditions, it is possible that dust and book lice appear in libraries, on upholstered furniture, in basements, kitchens or on indoor plants. They can live on the hardly visible layers of mould and algae on food, wallpaper, stationery and books. Only when appearing en masse, dust and book lice become annoying and contaminate books, wallpapers or food which consequently may deteriorate more quickly. Primary preventive measures against their infestation are the reduction of the air humidity indoors by adequate ventilation and heating. Beside the damage they cause, dust and book lice may be important regarding their allergological impact.

Storage pests: Darkling beetles (*Tenebrionidae*)

The shade-loving meal beetle, *Tenebrio molitor* (picture 2), of the family of darkling beetles (*Tenebrionidae*) is a frequently appearing storage pest in private dwellings. It belongs to the bigger and thus more eye-catching storage-damaging insects. In Central Europe it can also be found outdoors (for example in birds' nests, deadwood and duff). The meal beetle and its larvae (also called flourworm) eat and pollute starchy materials like grain, flour, dough and bakery products. Meal beetles may also enter private dwellings in already contaminated food. If food is contaminated by meal beetles or flourworms it should be destroyed in order to prevent further contamination. Cupboards should be cleaned thoroughly. Flour and other cereals should be stored only in well-sealed containers. As a precaution, uncontaminated food should be deep-frozen for some days. In the case of a major meal beetle plage, a pest controller may be contacted. Picture 2

Hygiene pests: Bedbugs (*Cimicidae*)

The bedbug, *Cimex lectularius* (pictures 3, 4), of the family of *Cimicidae*, is primarily a temporary ectoparasite specialized on the blood of humans and apes. It is nocturnal and attacks its victims while they are sleeping. Throughout the day it hides close to where its host sleeps, in slots and clearances on the floor, on walls, between door frames or in furniture. In the case of a severe infestation bedbugs leave a typical sweetish smell in the room. The medicinal and hygienic relevance of bedbugs primarily

is their annoyance as bloodsuckers. But not all bugs indoors are bedbugs. Sometimes, blood-sucking insects like pigeon- or batbugs can be found. Especially after remediation measures, these animals can't return to their nest, because the loophole has been closed, and their bugs are left. After a hunger period of about half an year, the bugs will search for a new host. They migrate into the flat and suck at humans. According to the present state of knowledge bugs surprisingly do not play a role in the transmission of dangerous diseases. Due to their hidden living mode eradication measures should necessarily be carried out by an official pest controller who also should have a look at the garret. Especially in warm seasons an occasional bug infestation can result from birds' nests situated close to windows.



Picture 1:
Lepinotus spec.
(Psocoptera)



Picture 2:
Tenebrion molitor/meal beetle
(Tenebrionidae)



Pictures 3, 4:
Cimex spec.
(Cimicidae)

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<http://www.gesundheitsamt-bw.de/oegd/Gesundheitsthemen/HygieneInfektionsschutz/LaestlingeSchaedlinge>

What are biocides?

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Biocides are active substances and preparations containing one or more active substances, with the intended property to destroy, deter, render harmless, prevent the action of, or otherwise exert a controlling effect on any harmful organism by chemical or biological means. Biocidal products are necessary for the control of organisms that are harmful to human or animal health or that cause damage to materials. But as their properties can also pose risks to humans, animals and the environment, they need careful regulation. The regulation of biocidal products in the EU refers to 23 different [product types](#). These include disinfectants used in different areas, chemicals used for preservation of products and materials, non-agricultural pesticides and anti-fouling products used on hulls of vessels. The regulation process will not apply to certain product types already covered by other Community legislation, such as plant protection products, medicines, and cosmetics.

Regulation by the Biocides Directive 98/8/EC of 16 February 1998

In 1998, a first comprehensive rule on the placing on the market of biocides has been adopted in the EU with the Biocides Directive 98/8/EC of the European Parliament and of the Council. According to the Directive, Member States had to transpose the rules before 14 May 2000 into national law.

The Directive established a two-step process of approval:

- 1) Evaluation of the active substance at the Union level, and
- 2) Product authorisation at Member State level.

The basic principles of the Directive were:

- Active substances have to be assessed and the decision on their inclusion into [Annex I](#) of the Directive shall be taken at Community level.
- In accordance with Article 16 of Regulation (EC) 1451/2007, the competent authority reports concerning the evaluation of active substances in the review programme shall be made publicly available by electronic means, except for information that is to be treated as confidential. Reports as they become available are posted [here](#).
- Comparative assessment will be made at the Community level when an active substance, although in principle acceptable, still causes concern. Inclusion to [Annex I](#) may be denied if there are less harmful, suitable substitutes available for the same purpose.
- Member States shall authorise the biocidal products in accordance with the rules and procedures set in [Annex VI](#) of the Directive. They can only authorise products which contain active substances included in [Annex I](#).
- The producers and formulators responsible for the placing of the market of the biocidal products and their active substances must apply for authorisation and submit all necessary studies and other information needed for the assessments and the decision making.
- A biocidal product authorised in one Member State shall be authorised upon application also in other Member State unless there are specific grounds to derogate from this principle of [mutual recognition](#).

New rules by the Biocidal Products Regulation (BPR; Regulation (EU) 528/2012)

A revision of the directive was carried out with the Regulation (EU) No 528/2012 of the European Parliament and of the Council concerning the making available on the market and use of biocidal products. It was adopted on 22 May 2012 and will repeal and replace Directive 98/8/EC, and will be applicable as of 1 September 2013. The Regulation was published on 27 June 2012 and the text can be found [here](#).

The new Regulation will maintain the two-step approach of the Directive while providing for the possibility that some biocidal products are authorised at the Union level giving them direct access to the entire Union market.

The objective of the new Regulation is to improve the functioning of the internal market in biocidal products whilst ensuring a high level of environmental and human health protection. The new Regulation will also remedy a number of weaknesses that were identified during the 11 years of implementation of the current Directive 98/8/EC.

For the approval of active substances, the Regulation introduces the exclusion and substitution criteria as new elements. Active substances meeting the **exclusion criteria** will not be approved. This includes carcinogens, mutagens and reprotoxic substances category 1A or 1B according to the CLP Regulation, endocrine disruptors, persistent, bioaccumulative and toxic (PBT) substances, and very persistent and very bioaccumulative (vPvB) substances. Derogations are foreseen, in particular when the active substance might be needed on grounds of public health or of public interest when no alternatives are available.

Active substances meeting the **substitution criteria** will be designated as candidates for substitution during the approval procedure. The criteria are based on the intrinsic hazardous properties in combination with the use and potential exposure. During the evaluation for national or Union authorisation of a biocidal product that contains active substances considered as candidates for substitution, a

comparative assessment will be performed to estimate whether less harmful products are available for the same use.

The new provisions will also reduce animal testing by making data sharing compulsory and encouraging a more flexible and intelligent approach to testing. A dedicated IT platform (the Register for Biocidal Products) will be used for submitting applications as well as recording decisions and disseminating information to the public. The new Regulation is also the first piece of legislation to build in the new Commission definition on nanomaterials.

The [European Chemicals Agency](#) (ECHA) will provide a strong scientific and technical back-up to the Commission and the Member States under this new Regulation. In particular, ECHA will be responsible for the assessment of applications for the Union authorisation of biocidal products.

In summary some key elements in a nutshell:

- Provide for the authorisation at the Union level of certain biocidal products;
- Improve the functioning of national authorisations and mutual recognition by introducing binding deadlines and strengthening the system of mutual recognition dispute settlement;
- Reduce the number of animal tests by obligatory data sharing with respect to vertebrate animal studies;
- Strengthen the rules on data waiving (i.e. not request data which is not necessary);
- Extend the scope to cover articles and materials treated with biocidal products (e.g. furniture treated with wood preservatives), which are imported from third countries;
- Harmonised fee structure which will harmonise the conditions and criteria for setting the fees in all Member States;
- The European Chemicals Agency (ECHA) will be involved in the scientific work on biocides;
- Persons placing biocidal products on the market will have to hold the data on active substances (before they are obliged to do so under the product authorisation application).

For further information, please see:

<http://www.umweltbundesamt.de/chemikalien/biozide/index.htm> 

<http://biozid.info/> 

<http://www.baua.de/de/Chemikaliengesetz-Biozidverfahren/Biozide/Dokumente/Dokumente.html> 

Publications and Resources

How vulnerable could your city be to climate impacts?

Climate change will affect Europe's cities in different ways. It is expected to increase the frequency and intensity of river floods and extreme temperature events in many parts of Europe. If heavy rain caused rivers to rise by one metre, which European cities could be most at risk from flooding? Which cities could provide relief during heat waves with large green areas and which city designs could most exacerbate the effect of heat waves? What are the capacities of different European cities to cope with climate change impacts and to adapt to future changes? To give an overall impression of the challenge for European cities to adapt to climate change, the European Environment Agency (EEA) has published a series of detailed interactive maps, allowing users to explore data from more than 500 cities across Europe. Further information is available online:

<http://www.eea.europa.eu/highlights/how-vulnerable-is-your-city>

Climate change: Property management strategies



BBSR report on the need for action of private owners in climate change adaptation.

In Germany, privately owned residential properties make up about 80% of the total housing stock. Yet, so far there is only little scientific evidence on the socio-demographic structure, the decision motives and the actual investment behaviour of this heterogeneous group of owners and landlords.

There may be a considerable lack of information and resources with respect to the consequences of climate change. This special report will give a prospect on the required actions of private owners in the climate change adaptation by example scenarios. The scenarios are based on so-called settings. A certain combination of future environmental conditions, location types, building types and forms of ownership is made to establish a hypothetical, plausible scenario.

<http://www.bbsr.bund.de/BBSR/DE/Veroeffentlichungen/BMVBS/Online/2012/ON142012.html> 

Literature

In this section we will provide a collection of recent housing and health publications from a variety of backgrounds. Literature published in German or French, respectively, is indicated with the German flag  or the French flag .

If you have suggestions for interesting journals that we should screen for the literature collection, please let us know!

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Allergies and Respiratory Diseases

[Particular characteristics of allergic symptoms in tropical environments: follow up to 24 months in the FRAAT birth cohort study.](#)

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BMC Pulm Med. 2012 Mar 22;12:13.

[Dry collection and culture methods for recovery of methicillin-susceptible and methicillin-resistant Staphylococcus aureus strains from indoor home environments.](#)

Davis MF, Baron P, Price LB, Williams DL, Jeyaseelan S, Hambleton IR, Diette GB, Breyse PN, McCormack MC.
Appl Environ Microbiol. 2012 Apr;78(7):2474-6.

[A study on indoor environment contaminants related to dust mite in dwellings of allergic asthma patients and of healthy subjects.](#)

Feng M, Yang B, Zhuang YJ, Yanagi U, Cheng XJ.
Biosci Trends. 2012 Feb;6(1):7-9.

[Effect of cat and daycare exposures on the risk of asthma in children with atopic dermatitis.](#)

Gaffin JM, Spergel JM, Boguniewicz M, Eichenfield LF, Paller AS, Fowler JF Jr, Dinulos JG, Tilles SA, Schneider LC, Phipatanakul W.
Allergy Asthma Proc. 2012 May-Jun;33(3):282-8.

[Predicted risk of childhood allergy, asthma, and reported symptoms using measured phthalate exposure in dust and urine.](#)

Hsu NY, Lee CC, Wang JY, Li YC, Chang HW, Chen CY, Bornehag CG, Wu PC, Sundell J, Su HJ. Indoor Air. 2012 Jun;22(3):186-199.

[\[The revised guideline on Primary Allergy Prevention\].](#)

Kopp MV; Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2012 Mar;55(3):338-42. 

[Prevalence of atopy and allergic diseases in Korean children: associations with a farming environment and rural lifestyle.](#)

Lee SY, Kwon JW, Seo JH, Song YH, Kim BJ, Yu J, Park KS, Kim H, Kim EJ, Lee JS, Hong SJ. Int Arch Allergy Immunol. 2012;158(2):168-74.

[Childhood asthma and indoor allergen exposure and sensitization in Buffalo, New York.](#)

Lin S, Jones R, Munsie JP, Nayak SG, Fitzgerald EF, Hwang SA. Int J Hyg Environ Health. 2012 Apr;215(3):297-305.

[Mouse \(Mus m1\) and rat \(Rat n1\) allergen levels in dust from private and public houses in Strasbourg, France are lower than houses in the U.S.A.](#)

Muti D, Purohit A, Dazy A, Verot A, de Blay F. Eur Ann Allergy Clin Immunol. 2012 Apr;44(2):93-5.

Indoor Air

[Effect of indoor air pollution from biomass and solid fuel combustion on prevalence of self-reported asthma among adult men and women in India: findings from a nationwide large-scale cross-sectional survey.](#)

Agrawal S. J Asthma. 2012 May;49(4):355-65.

[Modeling the residential infiltration of outdoor PM\(2.5\) in the Multi-Ethnic Study of Atherosclerosis and Air Pollution \(MESA Air\).](#)

Allen RW, Adar SD, Avol E, Cohen M, Curl CL, Larson T, Liu LJ, Sheppard L, Kaufman JD. Environ Health Perspect. 2012 Jun;120(6):824-30.

[Assessment of human exposure to indoor organic contaminants via dust ingestion in Pakistan.](#)

Ali N, Van den Eede N, Dirtu AC, Neels H, Covaci A. Indoor Air. 2012 Jun;22(3):200-11.

[Poor air quality in classrooms related to asthma and rhinitis in primary schoolchildren of the French 6 Cities Study.](#)

Annesi-Maesano I, Hulin M, Lavaud F, Raherison C, Kopferschmitt C, de Blay F, Charpin DA, Denis C. Thorax. 2012 Aug;67(8):682-8.

[Neutrophilic inflammatory response and oxidative stress in premenopausal women chronically exposed to indoor air pollution from biomass burning.](#)

Banerjee A, Mondal NK, Das D, Ray MR. Inflammation. 2012 Apr;35(2):671-83.

[Particulate matter concentrations in residences: an intervention study evaluating stand-alone filters and air conditioners.](#)

Batterman S, Du L, Mentz G, Mukherjee B, Parker E, Godwin C, Chin JY, O'Toole A, Robins T, Rowe Z, Lewis T. Indoor Air. 2012 Jun;22(3):235-52.

[Household air pollution and children's blood pressure.](#)

Baumgartner J, Zhang Y, Schauer JJ, Ezzati M, Patz JA, Bautista LE. Epidemiology. 2012 Jul;23(4):641-2.

[Residential black carbon exposure and circulating markers of systemic inflammation in elderly males: the normative aging study.](#)

Fang SC, Mehta AJ, Alexeeff SE, Gryparis A, Coull B, Vokonas P, Christiani DC, Schwartz J. Environ Health Perspect. 2012 May;120(5):674-80. *Free Article.*

[Lethal carbon monoxide poisoning in wood pellet storerooms--two cases and a review of the literature.](#)

Gauthier S, Grass H, Lory M, Krämer T, Thali M, Bartsch C. Ann Occup Hyg. 2012 Aug;56(7):755-63. *Review.*

[Suspension and resuspension of dry soil indoors following track-in on footwear.](#)

Hunt A, Johnson DL. Environ Geochem Health. 2012 Jun;34(3):355-63.

[Contamination of benzotriazole ultraviolet stabilizers in house dust from the Philippines: implications on human exposure.](#)

Kim JW, Isobe T, Malarvannan G, Sudaryanto A, Chang KH, Prudente M, Tanabe S. Sci Total Environ. 2012 May 1;424:174-81.

[Polychlorinated biphenyls in vacuum dust and blood of residents in 20 Wisconsin households.](#)

Knobeloch L, Turyk M, Imm P, Anderson H. Chemosphere. 2012 Feb;86(7):735-40.

[Lead contamination in French children's homes and environment.](#)

Lucas JP, Le Bot B, Glorennec P, Etchevers A, Bretin P, Douay F, Sébille V, Bellanger L, Mandin C. Environ Res. 2012 Jul;116:58-65.

[Bioaerosols in residential micro-environments in low income countries: a case study from Pakistan.](#)

Nasir ZA, Colbeck I, Sultan S, Ahmed S. Environ Pollut. 2012 Sep;168:15-22.

[Clinical Inquiry. How does smoking in the home affect children with asthma?](#)

Neogi T, Neher JO, Safranek S. J Fam Pract. 2012 May;61(5):292-3. *Review.*

[Lead exposures from varnished floor refinishing.](#)

Schirmer J, Havlena J, Jacobs DE, Dixon S, Ikens R. J Occup Environ Hyg. 2012;9(4):280-7.

[Contribution of solid fuel, gas combustion, or tobacco smoke to indoor air pollutant concentrations in Irish and Scottish homes.](#)

Semple S, Garden C, Coggins M, Galea KS, Whelan P, Cowie H, Sánchez-Jiménez A, Thorne PS, Hurley JF, Ayres JG. Indoor Air. 2012 Jun;22(3):212-23.

[Endotoxin exposure in inner-city schools and homes of children with asthma.](#)

Sheehan WJ, Hoffman EB, Fu C, Baxi SN, Bailey A, King EM, Chapman MD, Lane JP, Gaffin JM, Permaul P, Gold DR, Phipatanakul W. Ann Allergy Asthma Immunol. 2012 Jun;108(6):418-22.

[Performance of installed cooking exhaust devices.](#)

Singer BC, Delp WW, Price PN, Apte MG. Indoor Air. 2012 Jun;22(3):224-34.

[Influence of home characteristics on airborne and dustborne endotoxin and \$\beta\$ -D-glucan.](#)

Singh U, Levin L, Grinshpun SA, Schaffer C, Adhikari A, Reponen T. J Environ Monit. 2011 Nov;13(11):3246-53.

[Asthma induced by exposure to spray polyurethane foam insulation in a residential home.](#)

Tsuang W, Huang YC. J Occup Environ Med. 2012 Mar;54(3):272-3.

[Indoor air pollutants and health in the United Arab Emirates.](#)

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[Measurement of air exchange rates in different indoor environments using continuous CO2 sensors.](#)

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[Concentrations and seasonal variations of polybrominated diphenyl ethers \(PBDEs\) in in- and out-house dust and human daily intake via dust ingestion corrected with bioaccessibility of PBDEs.](#)

Yu YX, Pang YP, Li C, Li JL, Zhang XY, Yu ZQ, Feng JL, Wu MH, Sheng GY, Fu JM. Environ Int. 2012 Jul;42:124-31.

Mould and Dampness

[Assessment of home environments with a fungal index using hydrophilic and xerophilic fungi as biologic sensors.](#)

Abe K. Indoor Air. 2012 Jun;22(3):173-85.

[Some chronic rhinosinusitis patients have elevated populations of fungi in their sinuses.](#)

Murr AH, Goldberg AN, Pletcher SD, Dillehay K, Wymer LJ, Vesper SJ. Laryngoscope. 2012 Jul;122(7):1438-45.

[Association between indoor fungi in Delhi homes and sensitization in children with respiratory allergy.](#)

Sharma R, Gaur SN, Singh VP, Singh AB. Med Mycol. 2012 Apr;50(3):281-90.

Light and Radiation

[Field experience on indoor radon, thoron and their progenies with solid-state detectors in a survey of Kosovo and Metohija \(Balkan region\).](#)

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[Estimation of past radon exposure to indoor radon from embedded ²¹⁰Po in household glass](#)

Gusain GS, Rautela BS, Ramola RC. Radiat Prot Dosimetry. 2012 Aug 11.

[A prediction model for assessing residential radon concentration in Switzerland.](#)

Hauri DD, Huss A, Zimmermann F, Kuehni CE, Rösli M. J Environ Radioact. 2012 Oct;112:83-9.

[How to ensure that national radon survey results are useful for public health practice.](#)

Henderson SB, Kosatsky T, Barn P. Can J Public Health. 2012 May-Jun;103(3):231-4.

[Human exposure to indoor radon: a survey in the region of Guarda, Portugal.](#)

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Event Announcements

7th National Housing Conference - Brisbane 2012

Date: October 30, – November 2, 2012

Venue: Brisbane, Australia

Further Information: [Brisbane 2012 - National Housing Conference](#)

Klimagerechte Stadtentwicklung in der Praxis - Kongress

Date: October 9-10, 2012

Venue: Berlin, Germany

Further Information: [Klimagerechte Stadtentwicklung in der Praxis](#)

Intelligent Cities Expo 2012

Date: October 30 - November 1, 2012

Venue: San Francisco, USA

Further Information: [Intelligent Cities Expo 2012 | HOME](#)

Wohnungslüftung - Anforderungen, technische Lösungen, Planungsmethoden 

Fachsymposium des Fraunhofer-Instituts für Bauphysik IBP

Date: November 21, 2012

Venue: Munich Germany

Further Information: [Fachsymposium WOHNUNGSLÜFTUNG](#)**Sport in der Stadt - Sports in the City** **6. Jahrestagung der dvs-Kommission Sport und Raum****6th annual meeting of dvs-commission for sports and environment**

Date: November 14-15, 2012

Venue: Frankfurt / Main, Germany

Further Information: [dvs | Deutsche Vereinigung für Sportwissenschaft: 12-20 | Sport und Raum 2012](#)**6. Jahrestagung der Gesellschaft für Hygiene, Umweltmedizin und Präventivmedizin (GHUP)****4. GHUP-Workshop Schimmelpilze** **6th GHUP Annual Meeting / 4th GHUP Workshop on Moulds**

Date: November 22-23, 2012

Venue: Freiburg, Germany

Further Information: [GHUP Jahrestagung](#)**Immobilien- und wohnungswirtschaftliche Strategien und Potenziale zum Klimawandel (ImmoKlima)** 

Abschlussveranstaltung

Date: November 28, 2012,

Venue: Bonn, Germany

Further Information: [ImmoKlima](#)**WISC 2012, XIII World Allergy Congress**

Date: December 6-9, 2012

Venue: Hyderabad, India

Further Information: [WAO International Scientific Conference 2012](#)**BAU 2013 - World's Leading Trade Fair for Architecture, Materials, Systems**

Date: January 14-19, 2013

Venue: Munich, Germany

Further Information: [BAU – World's Leading Trade Fair for Architecture, Materials, Systems](#)**WBCIB - World Building Congress 2013**

Date: May, 5-9, 2013

Venue: Brisbane, Australia

Further Information: [World Building Congress 2013 |](#)

Message Board

In this section we will inform you about activities and projects related to housing and health that are being carried out by WHO or the WHO CC. This may relate to ongoing activities and projects, as well as invitations to participate in data collections or case study projects.

WHO work on indoor and built environments**WHO Observatory publishes book on "Intersectoral governance for health in all policies"**

Many of the policies and programmes that affect health originate outside the health sector. Governments therefore need to address population health using a strategy or policy principle that fosters intersectoral action.

Health in all policies (HiAP) does just that, encouraging intersectoral approaches to management, coordination and action. This publication captures the research on how intersectoral governance structures operate, showing:

- how governments and ministries can initiate action, and
- how intersectoral governance structures can be successfully established, used and sustained.

It provides accessible and relevant examples for policy-makers of the governance tools and instruments available, and over 20 mini case studies from Europe, the Americas, Asia and Australia on how countries currently use intersectoral governance for HiAP. It also identifies key intersectoral structures and how they facilitate intersectoral action

The publication can be accessed at

http://www.euro.who.int/_data/assets/pdf_file/0005/171707/Intersectoral-governance-for-health-in-all-policies.pdf

Addressing the social determinants of health: the urban dimension and the role of local government

This report summarizes the evidence on the social determinants of health in the urban context, drawing on the findings of the global Commission on Social Determinants of Health and the European review of social determinants of health and the health divide.

It also highlights how, through its leadership, local government can play a significant role in addressing these causes of health inequalities, by working across sectors and with civil society partners.

This report provides a helpful overview of practices from across Europe, and identifies priority action areas and key implementation issues, to support and accelerate the growing interest of local governments in being sensitive and proactive in tackling inequities.

The report is available at

http://www.euro.who.int/_data/assets/pdf_file/0005/166136/UrbanDimensions.pdf

"Atlas of health and climate" jointly published by WHO and WMO

The Atlas of health and climate is the product of a unique collaboration between the meteorological and public health communities. It provides sound scientific information on the connections between weather and climate and major health challenges. These range from diseases of poverty to emergencies arising from extreme weather events and disease outbreaks. They also include environmental degradation, the increasing prevalence of noncommunicable diseases and the universal trend of demographic ageing.

The report can be accessed at <http://www.who.int/globalchange/publications/atlas/en/index.html>

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