

Name	Hänninen, <u>Otto</u> Olavi, Mr.		
Birth	Lahti, FINLAND (Civil Register; biological birth in Turku - Åbo)	Year, mo, day 1963 06 21	
Affiliation	Senior Researcher Terveyden ja hyvinvoinnin laitos P.O.B. 95 FI-70701 Kuopio FINLAND	tel. institute fax tel mobile e-mail	+358-(0)29-524 6000 Operator +358-(0)29-524 6499 Department, Kuopio +358-(0)29-526 6471 Direct +358-(0)400 673 207 otto.hanninen@thl.fi
Academic	B.Sc., University of Kuopio M.Sc., Environmental Hygiene, University of Kuopio Ph.D., University of Kuopio Adjunct professor (Docent), University of Kuopio	1988 09 14 1990 02 06 2005 09 01 2007 05 01	
Assignments	Researcher, Neste Inc., Environment and Safety Researcher, I&M Suunnittelu Inc. Project Manager, I&M Suunnittelu Inc. Managing Director, I&M Suunnittelu Inc. Lecturer, North-Savo Vocational Education Institute Lecturer, University of Kuopio Technical Officer, WHO European Centre for Environment and Health, Bonn, Germany -" Visiting Scientist, Inst. of Epidemiology, Helmholtz-Zentrum München Researcher, KTL (National Public Health Institute) Senior Researcher, THL (National Institute for Health and Welfare	Start Year mm dd - Year mm dd	End Year mm dd Full time Equivalent
		1989 01 01 - 1989 06 05 1989 09 01 - 1989 12 31 1990 01 01 - 1995 03 31 1995 04 01 - 1996 03 03 1993 04 05 - 1993 09 30 1988 03 08 - 1998 10 31 2006 02 22 – 2006 06 30 and 2006 09 25 – 2006 11 16 2007 05 21 – 2007 11 16 2008 03 17 – 2008 09 16 1996 03 04 – 2008 12 31 2009 01 01 – continuing	0.5 yr 0.3 yr 5.0 yr 1.0 yr 0.5 yr 0.5 yr 0.5 yr 0.5 yr 12 yr (5.7 yr)
Research focus	Dr. Hänninen's background is in exposure modelling, aiming at understanding significant processes leading to environmental health risks. His dissertation focused on probabilistic techniques to model population exposures to fine particulate matter, accounting for indoor and outdoor sources, infiltration and timeactivity related mobility of the population. Recently he has incorporated a larger number of pollutants and physical environmental stressors in the analyses as has promoted the use of environmental burden of disease concepts in comparisons of health risks caused by various factors. Currently he is developing methods to analyze risk mitigation measures and to prioritize them based on their reduction potentials (effectiveness), costs, and perceptions.		
Examples of scientific duties	<p>WHO Technical officer coordinating work of the international group of experts on the "Assessment of health risks of heavy metals from long-range transboundary air pollution", Task force on health of the UNECE Convention on LRTAP, WHO, European Centre for Environment and Health, Bonn, Germany. Working group meeting in Berlin on May 30-31, 2006.</p> <p>Organizer and Co-chair of the Symposium on "Population exposure modeling and urban air quality management in Europe" in the International Congress on Environmental Epidemiology and Exposure (ISEE/ISEA), Paris, September 2006.</p> <p>WHO Technical officer preparing the planning meeting of the international group of experts on the "Development of WHO Guidelines for Indoor Air Quality", Bonn, 23-24 October 2006. WHO, European Centre for Environment and Health.</p> <p>Scientific secretary of the WHO working group for Development of WHO Guidelines for Indoor Air Quality, Dampness, mould and ventilation. WHO, European Centre for Environment and Health, 2007.</p> <p>Organizing Symposium Re-evaluating Exposure Science for 21st Century at ISES-ISEE joint Conference in Seoul, Korea, 28. August – 1 September, 2010 together with Kiyoung Lee and Tina Bahadori in honour of lifetime work of prof. Matti Jantunen.</p> <p>Organizing and chairing Special Session S011 on Linking ambient PM concentrations with epidemiologically derived response functions at International Aerosol Conference (IAC), Helsinki, 29 August – 3 September 2010 together with Thomas Kühlbusch and Josef Cyrys.</p> <p>Session organizer "From PM exposure to health effects" with prof. Jeroen Buters at the European Aerosol Conference, Manchester, UK, 4.-9.9.2011.</p> <p>Invited expert of WHO Working group and author of scientific background documents for "Monitoring the implementation of Parma Conference commitments: organizational and methodological issues", meetings 25-26.November, 2010, 4-5.April, 2011, and 29-30. September, 2011, Bonn, Germany.</p>		

Module 3.3c leader on Environmental Burden of Disease at the WHO Capacity Building training course in Riga, Latvia on 19-23.3.2012. Reviewer of the REVIHAAP project 2012-13. Invited expert, WHO School survey, exposures and ventilation 2011-2014.

Organizer of Sessions B1-B3 on Air Quality, Health and Exposure at Conference on Air Quality, Athens, Greece, 22.3.2012.

Plenary presenter of the International Conference on Environment and Health: Perspectives to the European sources of environmental burden of disease. 30.5.2012, Lisbon, Portugal. <http://iceh2012.com/>

Member of the International Advisory Committee of the Healthy Buildings 2012 Conference, Brisbane, Australia (<http://hb2012.org/committees/international-advisory-committee/>)

Co-chair of the Particle-Lung Interaction Working group of European Aerosol Association (2013-2015)

Principal investigator and workpackage/action leader of a number of national (e.g. PM Sizex, TEKAISU), Nordic (e.g. FAN) and international/EU project (e.g. EXPOLIS, FUMAPEX, TRANSPHORM, HEALTHVENT, EXPAH).

Publications by category (1.9.2014)		
1. Scientific articles and communications in peer reviewed journals		49
Manuscripts		17
2. Scientific peer reviewed conference papers and abstracts		133
3. Scientific reports, monographs and book chapters		33
4. Scientific presentations		79
5. Domestic professional monographs and book chapters (in Finnish)		12
6. Domestic professional presentations (in Finnish)		27
7. Articles in domestic professional magazines (in Finnish)		30
8. Project reports		147

Scientific Journals	
Reviewer <i>Atmospheric Chemistry and Physics (ACP)</i> (Copernicus Publications)	
Reviewer <i>Atmospheric Environment (AE)</i> (Elsevier)	
Reviewer <i>Atmospheric Research (AR)</i> (Elsevier)	
Reviewer <i>Atmospheric Science & Technology (AS&T)</i> (Taylor & Francis)	
Reviewer <i>Building and Environment (BE)</i> (Elsevier)	
Reviewer, <i>Environmental Engineering and Management Journal</i>	
Reviewer <i>Environmental Health (EH)</i> (BioMed Central; Open review)	
Reviewer <i>Environmental Health Perspectives</i> (National Institute of Environmental Health Sciences)	
Reviewer <i>Environmental Research (ER)</i> (Elsevier)	
Reviewer <i>Environmental Modeling and Assessment (EMR)</i> (Springer)	
Reviewer <i>Environmental Science & Technology (ES&T)</i> (American Chemical Society Publications)	
Reviewer <i>Indoor Air (IA)</i> (Blackwell)	
Reviewer <i>Indoor and Built Environment</i> (Sage Journals)	
Reviewer <i>International Journal of Environment and Pollution (IJEP)</i> (Inderscience Publishers)	
Reviewer <i>International Journal of Epidemiology (IJE)</i> (Oxford Univeristy Press)	
Reviewer <i>Journal of Air and Waste Management (JAWMA) Association</i>	
Reviewer <i>Journal of Environmental Management JEMA</i> (Elsevier)	
Reviewer <i>Journal of Exposure Analysis and Environmental Epidemiology (JEAEE)</i> ; since 2006 <i>Journal of Exposure Science and Environmental Epidemiology (JESEE)</i> (Nature Publishing Group)	
Reviewer <i>Journal of Nanoparticle Research (JNP)</i> (Springer)	
Reviewer <i>The Open Environmental & Biological Monitoring Journal (OEBMJ)</i> (Bentham)	
Reviewer <i>Water, Air and Soil Pollution (WASP)</i> (Springer)	
Editorial Board Member, <i>The Open Environmental & Biological Monitoring Journal</i> (http://www.bentham.org/open/toebmj) (Bentham Science Publishers)	
Chairing Guest Editor, <i>Air Quality, Atmosphere and Health</i> , 2011: 4(3-4).	
Guest Editor, <i>International Journal of Environmental Research and Public Health</i> , Special issue on Nanoparticles and their potential health effects, 2014	

Scientific supervision	
Master's theses: Jyrki Tiihonen, University of Kuopio; Voitto Tuomainen, University of Kuopio; Matti Peltonen, University of Eastern Finland; Juho Kutvonen, University of Eastern Finland; Isabell Rumrich, University of Eastern Finland;	
Doctoral programmes: Yuri Bruinen de Bruin, University of Bari, Marko Tainio, University of Kuopio, Nuno Canha, Instituto Tecnológico e Nuclear, Lisbon, Olli Leino, University of Eastern Finland, Virpi Kollanus, University of Eastern Finland, Marjo Niittynen, University of Eastern Finland, Susana Sarmento, University of Delft; Pedro Felix, University of Delft, Isabell Rumrich, U. Eastern Finland, Nuno Canha, University of Delft	
Post Doc: Miranda Loh, Arja Asikainen, Riikka Sorjamaa, Pasi Lipponen	
Recent theses	
Kutvonen J. 2014. Ympäristöriskien torjuntatoimenpiteiden terveyshyötyjen, kustannusten ja koettujen arvojen vertailu. Itä-Suomen yliopisto, Kuopio. 96 ss. http://urn.fi/urn:nbn:fi:uef-20140442	
Rumrich I, 2014. Environmental burden of disease of asthma: Impact of control options and protective factors. University of Eastern Finland, Kuopio, Finland.	

List of Publications

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6. Domestic professional presentations (in Finnish)	21
7. Articles in domestic professional magazines and proceedings (in Finnish)	22
8. Project reports	23

1. Scientific articles and communications in peer reviewed journals

- 1.1. Holopainen, J., Kainulainen, E., Hänninen, O.O., **1991**. Palatability of herbicide-treated maize to the Indian stick insect (*Carausius morosus*). *Agriculture, Ecosystems and Environment* 36: 191-197.
- 1.2. Wulff, A., Hänninen, O.O., Tuomainen, A., Kärenlampi, L., **1992**. A method for open-air exposure of plants to ozone. *Ann.Bot.Fennici* 29: 253-262.
- 1.3. Hänninen, O.O., Ruuskanen, J., Oksanen, J., **1993**. A method for facilitating the use of algae growing on tree trunks as bioindicators of air quality. *Environmental Monitoring and Assessment* 28: 215-220.
- 1.4. Jantunen, M.J., Hänninen, O.O., Katsouyanni, K., Knöppel, H., Künzli, N., Lebet, E., Maroni, M., Saarela, K., Srám, R.J., Zmirou, D., **1998**. Air pollution exposure in European cities: The EXPOLIS-study. *Journal of Exposure Analysis and Environmental Epidemiology* 8 (4): 495-518.
- 1.5. Koistinen, K.J., Kousa, A., Tenhola, V., Hänninen, O.O., Jantunen, M.J., Oglesby, L., Künzli, N., Georgoulis, L., **1999**. Fine particle (PM_{2.5}) measurement methodology, quality assurance procedures, and pilot results of the EXPOLIS study. *Journal of the Air & Waste Management Association* 49: 1212-1220.
- 1.6. Rotko, T., Koistinen, K., Hänninen, O.O., Jantunen, M., **2000**. Sociodemographic descriptors of personal exposure to fine particles (PM_{2.5}) in EXPOLIS-Helsinki. *Journal of Exposure Analysis and Environmental Epidemiology* 10 (4): 385-393.
- 1.7. Jurvelin, J., Edwards, R., Saarela, K., Laine-Ylijoki, J., De Bortoli, M., Oglesby, L., Schläpfer, K., Georgoulis, L., Tischerova, E., Hänninen, O.O., Jantunen, M., **2001**. Evaluation of VOC measurements in the EXPOLIS study. *Journal of Environmental Monitoring* 3: 159-165.
- 1.8. Koistinen, K.J., Hänninen, O.O., Rotko, T., Edwards, R.D., Moschandreas, D., Jantunen, M.J., **2001**. Behavioral And Environmental Determinants Of Personal Exposures To PM_{2.5} In EXPOLIS-Helsinki, Finland. *Atmospheric Environment* 35(14): 2473-2481.
- 1.9. Georgoulis, L.B., Hänninen, O.O., Samoli, E., Katsouyanni, K., Künzli, N., Srám, R.J., Bruinen de Bruin, Y., Alm, S., Jantunen, M., **2002**. Personal carbon monoxide exposures in five european cities and its determinants. *Atmospheric Environment* 36: 963-974.
- 1.10. Hänninen, O.O., Koistinen, K.J., Kousa, A., Keski-Karhu, J., Jantunen, M.J., **2002**. Quantitative analysis of environmental factors in differential weighing of blank Teflon filters. *Journal of the Air & Waste Management Association* 52(2): 134-139.
- 1.11. Götschi, T., Oglesby, L., Mathys, P., Monn, C., Manalis, N., Koistinen, K., Jantunen, M., Hänninen, O.O., Polanska, L., Künzli, N., **2002**. Comparison of Black Smoke and PM_{2.5} Levels in Indoor and Outdoor Environments of Four European Cities. *Environmental Science & Technology* 36(6): 1191-1197.
- 1.12. Jantunen, M.J., Hänninen, O.O., Koistinen, K.J., Hashim, J.H., **2002**. Fine PM measurements: personal and indoor air monitoring. *Chemosphere* 49: 993-1007.
- 1.13. Hänninen, O.O., Kruize, H., Lebet, E., Jantunen, M., **2003**. EXPOLIS Simulation Model: PM_{2.5} Application and Comparison with Measurements in Helsinki. *Journal of Exposure Analysis and Environmental Epidemiology* 13: 74-85.
- 1.14. Kruize, H., Hänninen, O.O., Breugelmans, O., Lebet, E., Jantunen, M., **2003**. Description and demonstration of the EXPOLIS simulation model: Two examples of modeling population exposure to particulate matter. *Journal of Exposure Analysis and Environmental Epidemiology* 13(2): 87-99.
- 1.15. Bruinen de Bruin, Y., Hänninen, O., Carrer, P., Maroni, M., Kephelopoulos, S., Scotto di Marco, G., Jantunen, M., **2004**. Simulation of working population exposures to carbon monoxide using EXPOLIS-Milan microenvironment concentration and time activity data. *Journal of Exposure Analysis and Environmental Epidemiology* 14(2), 154-163.

- 1.16. Bruinen de Bruin, Y., Carrer, P., Jantunen, M., Hänninen, O., Scotto di Marco, G., Kephelopoulos, S., Cavallo, D., Maroni, M., **2004**. Personal carbon monoxide exposure levels: contribution of local sources to exposures and microenvironment concentrations in Milan. *Journal of Exposure Analysis and Environmental Epidemiology* 14: 312-322.
- 1.17. Hänninen, O.O., Alm, S., Katsouyanni, K., Künzli, N., Maroni, M., Nieuwenhuijsen, M.J., Saarela, K., Srám, R.J., Zmirou, D., Jantunen, M.J., **2004**. The EXPOLIS Study: Implications for exposure research and environmental policy in Europe. *Journal of Exposure Analysis and Environmental Epidemiology* 14: 440-456.
- 1.18. Lai, H.K., Kendall, M., Ferrier, H., Lindup, I., Alm, S., Hänninen, O., Jantunen, M., Mathys, P., Colvile, R.N., Ashmore, M.R., Cullinan, P., Nieuwenhuijsen, M.J., **2004**. Personal exposures and microenvironment concentrations of PM_{2.5}, VOC, NO₂ and CO in a medium-sized town, Oxford, UK. *Atmospheric Environment* 38 (37): 6399-6410.
- 1.19. Hänninen, O.O., Lebret, E., Ilacqua, V., Katsouyanni, K., Künzli, N., Srám, R.J., Jantunen, M.J., **2004**. Infiltration of ambient PM_{2.5} and levels of indoor generated non-ETS PM_{2.5} in residences of four European cities. *Atmospheric Environment* 38 (37): 6411-6423.
- 1.20. Tainio T, Tuomisto JT, Aarnio P, Pekkanen J, Hänninen O, Koistinen K, Jantunen MJ., **2005**. Health effects caused by primary fine particulate matter (PM_{2.5}) emitted from busses in Helsinki Metropolitan Area, Finland. *Risk Analysis* 25(1): 151-160.
- 1.21. Hänninen, O.O., Lebret, E., Tuomisto, J.T., Jantunen, M.J., **2005**. Characterization of model error in the simulation of PM_{2.5} exposure distributions of the working age population in Helsinki, Finland. *Journal of the Air & Waste Management Association* 55:446-457.
- 1.22. Hänninen, O.O., Palonen, J., Tuomisto, J., Yli-Tuomi, T., Seppänen, O., Jantunen, M.J., **2005**. Reduction potential of urban PM_{2.5} mortality risk using modern ventilation systems in buildings. *Indoor Air* 15 (4): 246-256.
- 1.23. Baklanov, A., Hänninen, O., Slørdal, L.H., Kukkonen, J., Bjergene, N., Fay, B., Finardi, S., Hoe, S.C., Jantunen, M., Karpinen, A., Rasmussen, A., Skouloudis, A., Sokhi, R.S., Sørensen, J.H., **2006**. Integrated systems for forecasting urban meteorology, air pollution and population exposure. *Atmospheric Chemistry and Physics Discussions*, 6, 1867-1913. <http://www.copernicus.org/EGU/acp/acpd/6/1867/acpd-6-1867.htm>
- 1.24. Hänninen, O., Jantunen, M., **2007**. Response to findings on association between temperature and dose-response coefficient of inhalable particles (PM₁₀). *Journal of Epidemiology and Community Health*. 61(9):838.
- 1.25. Ilacqua V, Hänninen O, Saarela K, Katsouyanni K, Künzli N, Jantunen MJ., **2007**. Source apportionment of population representative samples of PM_{2.5} in three European cities using structural equation modelling. *Science of the Total Environment* 384(1-3): 77-92.
- 1.26. Tainio M., Tuomisto J.T., Hänninen O., Ruuskanen J., Jantunen M., and Pekkanen J., **2007**. Parameter and model uncertainty in a life-table model for fine particles (PM_{2.5}): a statistical modeling study. *Environmental Health*. 2007 Aug 23;6(1):24. (<http://www.ehjournal.net/content/6/1/24> accessed 5 Oct 2007)
- 1.27. Ilacqua V, Hänninen O, Künzli N, Jantunen M. **2007**. Intake fraction distributions for indoor VOC sources in five European cities. *Indoor Air* 17: 372-383.
- 1.28. Baklanov A, Hänninen O, Slørdal LH, Kukkonen J, Bjergene N, Fay B, Finardi S, Hoe SC, Jantunen M, Karppinen A, Rasmussen A, Skouloudis A, Sokhi RS, Sørensen JH, Odegaard V. **2007**. Integrated systems for forecasting urban meteorology, air pollution and population exposure *Atmospheric Chemistry and Physics* 7: 855-874.
- 1.29. Hänninen, O. **2008**. Challenges in estimating the health effects of biomass smoke - Response to Sverre Vedal and Steven J. Dutton: Wildfire air pollution and daily mortality in a large urban area. *Environmental Research* 106:423-424.
- 1.30. Hänninen, O and Jantunen, M. **2008**. Response to Reid *et al.* Air quality modeling for policy development. *Journal of Toxicology and Environmental Health Part A*, 71:1051.
- 1.31. Hänninen, O., Salonen RO, Koistinen K, Lanki T, Barregard L, Jantunen M, **2009**. Population exposure to fine particles and estimated excess mortality in Finland from an East-European wildfire episode. *Journal of Exposure Science and Environmental Epidemiology*. 19(4):414-422.
- 1.32. Hänninen, O., Zauli-Sajani, S, De Maria,R, Lauriola, P, and Jantunen, M, **2009**. Integrated ambient and microenvironment model for estimation of PM₁₀ exposures of children in annual and episode settings. *Environmental Modeling and Assessment* 14:419-429. doi: 10.1007/s10666-008-9141-y <http://www.springerlink.com/content/112046p6p0h11336/> (accessed 7 August 2009).
- 1.33. Hänninen, O., Brüske-Hohlfeld I, Loh, M,Stoeger T, Kreyling W, Schmid O, Peters A, **2009**. Estimation of health risks and safety margins due to inhalation of ultrafine particles and nanoparticles in selected occupational, consumer and environmental settings. Grenoble Nanosafe 08 conference proceedings, Journal of Physics: Conference Series 170:012031 doi:10.1088/1742-6596/170/1/012031 http://www.iop.org/EJ/article/1742-6596/170/1/012031/jpconf9_170_012031.pdf (accessed 2009-08-28)
- 1.34. Hänninen, O., Brüske-Hohlfeld I, Loh, M, Stoeger T, Kreyling W, Schmid O, Peters A, **2010**. Occupational and consumer risk estimates for nanoparticles emitted by laser printers. Grenoble Nanosafe 08 Invited papers, Journal of

- Nanoparticle Research 12:91–99. (Online First 10 July 2009
<http://www.springerlink.com/content/70656474nhn12413/fulltext.pdf>)
- 1.35. Hänninen, O, Kauhaniemi, M, Karppinen, A, Kukkonen, J, Kousa, A, Jantunen, M. **2010**. Inter-comparison of predicted population exposure distributions during four selected episodes in Helsinki and evaluation against measured data. *International Journal of Environment and Pollution*. 40(1-3): 248-266.
 - 1.36. Zauli Sajani, S, Hänninen, O, Marchesi, S, Lauriola, P, **2011**. Comparison of different exposure settings in a case-crossover study on air pollution and daily mortality: counter-intuitive results. *Journal of Exposure Science and Environmental Epidemiology*, 21:385-394. <http://www.nature.com/jes/journal/v21/n4/pdf/jes201027a.pdf>
 - 1.37. Paur H-R, Cassee F, Teaguarden J, Fissan H, Diabate S, Aufderheide M, Kreyling WG, Hänninen O, Kasper G, Riediker M, Rothen-Rutishauser B, Schmid O, **2011**. In-vitro Exposure Studies for the Assessment of Nanoparticle Toxicity in the Lung – A Dialogue between Aerosol Science and Biology. *Journal of Aerosol Science* 42 (2011) 668–692. DOI: 10.1016/j.jaerosci.2011.06.005
 - 1.38. Hänninen O, Vardoulakis S, Sarigiannis DA, Incecik S, Sokhi RS, **2011**. Editorial: Focus on exposure to air pollution and related health impacts. *Air Qual Atmos Health* 4(3-4):159-160 DOI 10.1007/s11869-011-0137-4. <http://www.springerlink.com/content/p84t801050756047/fulltext.pdf> (accessed 2011-08-31)
 - 1.39. Gariazzo C, Hänninen O, Amicarelli A, Pelliccioni A, Silibello C, Sozzi R, Jantunen M, **2011**. Integrated model for the estimation of annual, seasonal and episode PM₁₀ exposures of children in Rome, Italy. *Air Qual Atmos Health* 4(3-4):169-178 <http://www.springerlink.com/content/qxu78xv4645g3v57/fulltext.pdf> (accessed 2011-08-31)
 - 1.40. Hänninen O, Hoek G, Mallone S, Chellini E, Katsouyanni K, Kuenzli N, Gariazzo C, Cattani G, Marconi A, Molnár P, Bellander T, Jantunen M, **2011**. Seasonal patterns of outdoor PM infiltration into indoor environments: review and meta-analysis of available studies from different climatological zones in Europe. *Air Qual Atmos Health* 4(3-4):221-233. <http://www.springerlink.com/content/k26h4563110m373g/fulltext.pdf> (accessed 2011-08-31) DOI: 10.1007/s11869-010-0076-5
 - 1.41. Hänninen O, **2013**. Novel second degree solution to single zone mass-balance equation improves the use of build-up data in estimating ventilation rates in classrooms. *Journal of Chemical Health and Safety* 20(2):14-19. doi:<http://dx.doi.org/10.1016/j.jchas.2012.12.001>
 - 1.42. Canha N, Almeida S, Freitas M, Täubel M, Hänninen O, **2013**. Winter Ventilation Rates at Primary Schools: Comparison between Portugal and Finland. *Journal of Toxicology and Environmental Health, Part A*,76(6):400-408. <http://dx.doi.org/10.1080/15287394.2013.765372>
 - 1.43. Asikainen A, Hänninen O, Brelih N, Leal V, Allard F, Wargocki P, **2013**. Proportion of residences in European countries with ventilation rates below the limit defined by regulations. *International Journal of Ventilation* 12(2): 129-134.
 - 1.44. Hänninen O, Sorjamaa R, Lipponen P, Cyrys J, Lanki T, Pekkanen J, **2013**. Aerosol-based modelling of infiltration of ambient PM_{2.5} and evaluation against population-based measurements in homes in Helsinki, Finland. *Journal of Aerosol Science* 66:111-122. (<http://www.sciencedirect.com/science/article/pii/S0021850213001754>) <http://dx.doi.org/10.1016/j.jaerosci.2013.08.004>.
 - 1.45. Morawska L, Afshari A, Bae G, Buonanno G, Chao C, Hänninen O, Hofmann W, Isaxon C, Jayaratne E, Pasanen P, Salthammer T, Waring M, Wierzbicka A, **2013**. Indoor aerosols: From personal exposure to risk assessment. (A review). *Indoor Air* 23(6):462-487. DOI: 10.1111/ina.12044 <http://onlinelibrary.wiley.com/doi/10.1111/ina.12044/abstract>
 - 1.46. Hänninen O, Knol A, Jantunen M, Lim T-A, Conrad A, Rappolder M, Carrer P, Fanetti A-C, Kim R, Buekers J, Torfs R, Iavarone I, Classen T, Hornberg C, Mekel O, and the EBoDE Group, **2014**. Environmental burden of disease in Europe: Assessing nine risk factors in six countries. *Environmental Health Perspectives*: 439-446. DOI:10.1289/ehp.1206154 <http://ehp.niehs.nih.gov/1206154/> (accessed 2014-05-05) (related Science Selections –article <http://ehp.niehs.nih.gov/122-a136/>)
 - 1.47. Soares J, Kousa A, Kukkonen J, Matilainen L, Kangas L, Aarnio M, Kauhaniemi M, Riikonen K, Jalkanen J-P, Rasila T, Hänninen O, Koskentalo T, Karppinen A, 2014. Refinement of a model for evaluating the population exposure in an urban area. *Geosci. Model Dev. Discuss.*, 7:2335-2375, www.geosci-model-dev-discuss.net/7/2335/2014/ doi:10.5194/gmdd-7-2335-2014.
 - 1.48. Soares J, Kousa A, Kukkonen J, Matilainen L, Kangas L, Aarnio M, Kauhaniemi M, Riikonen K, Jalkanen J-P, Rasila T, Hänninen O, Koskentalo T, Karppinen A, 2014. Refinement of a model for evaluating the population exposure in an urban area. *Geosci. Model Dev.*, 7, 1855-1872. <http://www.geosci-model-dev.net/7/1855/2014/> doi:10.5194/gmd-7-1855-2014.
 - 1.49. Gariazzo C, Lamberti M, Hänninen O, Silibello C, Pelliccioni A, Porta D, Cecinato A, Gherardi M, Forastiere F. 2014. Assessment of population PAHs exposure by means of integrated models and its uncertainty. *Atmospheric Environment* 101:235-245. <http://www.sciencedirect.com/science/article/pii/S1352231014009005#>

As of 2014-11-25

- 1.50. Hussein T, Wierzbicka A, Löndahl J, Lazaridis M, Hänninen O, 2014. Indoor aerosol modeling for assessment of exposure and inhaled dose. *Atmospheric Environment*. **Accepted**
- 1.51. Gu J, Kraus U, Schneider A, Hample R, Pitz M, Breitner S, Wolf K, Hänninen O, Peters A, Cyrys J, 2014. Personal day-time exposure to ultrafine particles in different microenvironments. *International Journal of Hygiene and Environmental Health*, **Accepted**. <http://www.sciencedirect.com/science/article/pii/S1438463914000984>
- 1.52. Fantke P, Jolliet O, Evans J, Apte J, Cohen A, Hänninen O, Hurley F, Jantunen M, Jerret M, Levy J, Loh M, Marshall J, Miller B, Preiss P, Spadaro J, Tainio M, Tuomisto J, Weschler C, McKone T, 2014. Confronting Health Effects of Particulate Matter in Life Cycle Impact Assessment. *International Journal of Life Cycle Assessment*. DOI 10.1007/s11367-014-0822-2. **Accepted**.

Submitted papers and manuscripts

- 1.53. Geels C, Andersson C, Hänninen O, Lansø AS, Schwarze P, Skjøth CA, Brandt J, 2014. Future Premature Mortality due to Air Pollution in Europe – Sensitivity to Changes in Climate, Anthropogenic Emissions, Population and Building stock. **Submitted**. *Int. J. Environ. Res. Public Health*
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- 1.55. Sakellaris I, Saraga D, Mandin C, Fossati S, Bluysen P, Carrer P, Dimitroulopoulou C, Mihucz V, Hänninen O, de Oliveira Fernandes E, Bartzis J, 2014. Occupant satisfaction towards the indoor environment in European modern offices: The OFFICAIR project. *Building and Environment*. **Manuscript**.
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- 1.62. Hänninen, O. et al., 2012. Modification of population exposures to particle number concentration by particle size dependent infiltration in Augsburg, Germany. **Manuscript**.
- 1.63. Hänninen, O. et al., 2012. Estimating alveolar particle surface area doses: opportunities and challenges . **Manuscript**.
- 1.64. Hänninen, O. et al., 2012. Exposures to traffic particles: role of different microenvironments. **Manuscript**.
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2. Scientific peer reviewed conference papers and abstracts

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4. Scientific presentations

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- 4.2. Hänninen O. (1996): Database description and dataentry. Presentation in the Second *EXPOLIS* workshop in Helsinki, 9.-13.9.1996.
- 4.3. Jantunen M, Hänninen O., Saarela K, Maroni M, Katsouyanni K, Lebret E, Kuenzli N, Sram R, Zmirou D (1996): Air Pollution Exposure Distributions of Adult Urban Populations in Europe: The *EXPOLIS* Study. Society for Risk Analysis and International Society of Exposure Analysis, Presentation given at the Annual Meeting and Exposition, Fairmont Hotel, December 8-12, 1996. New Orleans, USA. Final Program pp 137-138.
- 4.4. Hänninen O. (1997): *EXPOLIS* Database (EADB) structure and fundamentals; installation and data entry. Presentation in the Third *EXPOLIS* workshop in Grenoble, 22.-27.3.1997.
- 4.5. Hänninen O. (1998): (i) Principles of data cleaning (5.2.1998), (ii) Statistical analysis: Introduction (6.2.1998). Presentations in the Fourth *EXPOLIS* workshop in Bilthoven, 5.-8.2.1998.
- 4.6. Jantunen M and Hänninen O. (1999): An overview of the *EXPOLIS* study: study objectives, design, personal and microenvironmental exposure measurements. International conference for exposure to air pollution and health risk assessment, November 4.-5., 1999, Bern, Switzerland.
- 4.7. Hänninen O. (2001): Risk analysis and exposure modeling. Presentation in the 1st site visit of the Centre for Environmental Health Risk Analysis. Kuopio 25.4.2001.
- 4.8. Hänninen O. (2001): Probabilistic modeling of PM_{2.5} exposure distributions within an adult urban population. Presentation in the *EXPOLIS* seminar of the Environment Institute, Joint Research Centre, European Commission. Ispra 14.-15.6.2001.
- 4.9. Hänninen O. (2002): Development and evaluation of population exposure models in combination with urban air quality information systems. Presentation in the kick-off meeting of FUMAPEX study, Copenhagen, 27.-29.11.2002.
- 4.10. Hänninen O. and Jantunen M. (2003): Estimated Fine Particulate Matter Exposure Reduction Potential for Urban Population Using State of the Art Building Envelopes and Ventilation Systems: Example, Helsinki Finland. Proceedings of the Healthy Buildings Conference, Singapore, Dec 7.-11., 2003, presentation PS09-V-O5, pp. 219-224.
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- 4.13. Hänninen O. (2005): Probabilistic modelling of PM_{2.5} exposures in the working age population of Helsinki Metropolitan area. Public defence of doctoral theses. University of Kuopio, Faculty of Natural and Environmental Sciences, June 17th, 2005. Opponent: Professor Kaarle Hämeri, University of Helsinki, Department of Physics.
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- 4.18. Bertollini, R., Krzyzanowski, M., Hänninen O., 2006. Impact of air pollution on human health: a WHO systematic review in Europe. SCOPE Open 52nd Executive Committee Meeting. Scientific Symposium. Air pollution and human exposure complexity. Rome, 2-3 October 2006. Abstract book p. 3, ed. A. Carere.
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- 4.21. Hänninen, O., 2007. Air pollution exposure patterns: temporal and spatial differences across the EU. CONCAWE Workshop on Environment & Health: Air Quality Research Needs and Opportunities in the EU Seventh Framework Programme of Research (FP7), January 15-16, 2007, Bruxelles, Belgium.
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- 4.27. Hänninen, O., 2007. Exposure variability and implications for research and policy development. Docent lecture, University of Kuopio, Faculty of Natural and Environmental Sciences, April 26, 2007.
- 4.28. Hänninen, O., 2007. Probabilistic methods in human exposure assessment. Nordic Workshop on human exposure assessment methods in reach and biocide contexts. 9-10 May 2007, Oslo, Norway.
- 4.29. Hänninen, O., 2007. Complementary modeling concepts in exposure assessment: Deterministic, statistical and probabilistic techniques. Institutskollogium 24 September 2007, Forschungszentrum für Umwelt und Gesundheit (GSF), Neuherberg, München, Germany.
- 4.30. Hänninen, O., 2007. Development of WHO Guidelines for Indoor Air Quality and EHC 237 methodologies for assessing health risks in children. Indoor Air Platform, Brussels, 4 October 2007.
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- 4.35. Hänninen O (2008). Estimating long-term exposure distributions in European cities: analysis of variance components and quantification of long-term exposure determinants. Center for Microscale Ecosystems, University of Essen, Germany, 19 May 2008.
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- 4.43. Hänninen O, Brüske-Hohlfeld I, Schmid O, Kreyling W, Stoeger T, Schwarze PE, Cyrus J, Pitz M, Peters A, Wichman H-E, 2009. Comparison of in-vitro toxicity and epidemiologically determined mortality risk for ambient particles using alternative particle metrics. European Aerosol conference 2009, Karlsruhe, September 6-11, 2009. Nr. T105A13.
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- 4.45. The EBoDE Working Group, 2010. **Few environmental factors are responsible for most of the environmental burden of disease.** Poster session at 5th Ministerial Conference of WHO EURO, 10-12. March 2010, Parma, Italy. http://en.opasnet.org/w/EBoDE_Parma (accessed 2010-03-11)
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- 4.49. Hänninen O, Cyrus J, Pitz M, Brüske I, Kraus U, Schneider A, Schmid O, Peters A, 2010. Simulation of Personal PNC Exposures and Analysis of the Key Exposure Determinants. Special session S011, #344. Proceedings of International Aerosol Conference (IAC), Helsinki, 29 August – 3 September 2010.
- 4.50. Hänninen O, 2010. Pienhiukkaset - elefantti olohuoneessamme: Tutkimusta, riskinarviointia vai -hallintaa? Graduate School on Environmental Health (SYTYKE), Annual seminar, Hotel Scandic, Kuopio, Finland 4-5.10.2010 (in Finnish)
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- 4.55. Hänninen O, 2011. General concept of Air Quality and health (the relationship of air quality and health from exposure, epidemiology and risk assessment point of view). International Atomic Energy Agency (IAEA) Workshop on Assessment of Impact of Atmospheric Particulate Matter on Human Health, Sliema, Malta, on 18-20.May 2011.
- 4.56. Hänninen O, 2011. Multiple exposures in the environment affecting population health International Atomic Energy Agency (IAEA) Workshop on Assessment of Impact of Atmospheric Particulate Matter on Human Health, Sliema, Malta, on 18-20.May 2011.
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- 4.62. Hänninen O, 2011. Applying DALY-Methodologies to real world questions. SESSION II: DALY, Biomonitoring and Risk communication , 8th Valamo Conference, 10-12.10.2011, Valamo Monastery, Heinävesi, Finland.
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- 4.65. Hänninen O, Asikainen A, Bischof W, Carrer P, Seppänen O de Oliveira Fernandes E, Warcocki P, 2012. Health implications of alternative potential ventilation guidelines. Proceedings of Healthy Buildings Conference, Brisbane, 2012-07-8..12.
- 4.66. Hänninen O, Shaughnessy R, Turk B, Egorov A, 2012. Evaluation of ventilation rates in European schools using CO₂ measurements as part of a proposed WHO school survey. Proceedings of Healthy Buildings Conference, Brisbane, 2012-07-8..12.
- 4.67. Hänninen O, Asikainen A, Allard F, Bischof W, Carrer P, Seppänen O, Leal V, Kephelopoulos S, Warcocki P, 2012. Optimal ventilation: Balancing exposures to indoor and outdoor pollutants. Ventilation 2012, Paris, 17-19 September, 2012.
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- 4.70. Hänninen O, Sorjamaa R, Cyrus J, Peters A, Lanki T, Pekkanen J, 2012. Building as a particle size dependent exposure and dose modifier. Workplace and Indoor Aerosols Conference, 19-20th of April 2012, Lund University, Sweden.
- 4.71. Hänninen O, 2012. Biologically relevant exposure to source specific particles. CEFIC-LRI, Innovative Science Award 2012, European Chemical Industry Council, Brussels, 6.6.2012.
- 4.72. Hänninen O, 2012. Biologically relevant exposure to source specific particles. Future Nordic Air, Kick-off meeting, Roskilde, 2012-06-12.
- 4.73. Hänninen O, 2012. Development of a size-segregated microenvironmental model for PNC (Augsburg data). A Collaboration Workshop on Particle Size Dependent Exposure and Dose and Epidemiology, Helmholtz Zentrum München, Germany, 28.6.2012.
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