

Home > Journal > Earth & Environmental Sciences > JEP

[Indexing](#) [View Papers](#) [Aims & Scope](#) [Editorial Board](#) [Guideline](#) [Article Processing Charges](#)

JEP > Vol.2 No.7, September 2011

OPEN ACCESS

Metanalysis: Respiratory Effects in the General Population Exposed to Urban Pollution

PDF (Size: 152KB) PP. 974-981 DOI : 10.4236/jep.2011.27112

Author(s)

Angela Sancini, Francesco Tomei, Assunta Capozzella, Alessandro Pacchiarotti, Simone De Sio, Gianfranco Tomei, Paola Palermo, Manuela Ciarrocca

ABSTRACT

Aim: The purpose of this study was to evaluate spirometric lung function parameters in the general population exposed to urban pollution and confirm the existence of an association between exposure to environmental pollutants and effects from these products and which respiratory parameters are associated to urban pollution in general population. **Methods:** This study is a systematic research of all articles on the assessment of respiratory effects on general population exposed to urban pollution, excluding studies on adolescents and children. The research included articles from January 2008 to May 2009. In the articles included in our meta-analysis, the exposed group is represented by general population aged between 15 and 75 years for both genders, resident in very polluted urban areas, while the control group is represented by general population resident in rural and suburban areas, where pollution is lower. **Results:** The results confirm the presence of statistically significant effects of urban pollution on the respiratory system for cough, phlegm, shortness of breath/breathlessness, wheezing, FVC, FEV1, PEFr, chronic bronchitis, bronchial asthma, rhinitis, emphysema.

KEYWORDS

Urban Pollution, Respiratory Symptoms on General Population, Lung Disease, Environmental Exposure

Cite this paper

A. Sancini, F. Tomei, A. Capozzella, A. Pacchiarotti, S. Sio, G. Tomei, P. Palermo and M. Ciarrocca, "Metanalysis: Respiratory Effects in the General Population Exposed to Urban Pollution," *Journal of Environmental Protection*, Vol. 2 No. 7, 2011, pp. 974-981. doi: 10.4236/jep.2011.27112.

References

- [1] D. E. Abbey, B. E. Ostro, F. Petersen and R. J. Burchette, " Chronic Respiratory Symptoms Associated with Estimated Long-Term Ambient Concentrations of Fine Particulates Less Than 2.5 Microns in Aerodynamic Diameter (PM_{2.5}) and Other Air Pollutants," *Journal of Exposure Science and Environmental Epidemiology*, Vol. 5, No. 2, 1995, pp. 137-159.
- [2] N. Künzli, R. Kaiser, S. Medina, M. Studnicka, O. Chanel, P. Filliger, M. Herry, F. Horak Jr., V. Puybonnieux- Texier, P. Quenel, J. Schneider, R. Seethaler, J. C. Vergnaud and H. Sommer, " Publichealth Impact of Outdoor and Traffic-Related Air Pollution: A European Assessment," *Lancet*, Vol. 356, No. 9232, 2000, pp. 795-801.
- [3] D. E. Abbey, et al., " Long-Term Ambient Concentrations of Total Suspended Particulates, Ozone, and Sulfur Dioxide and Respiratory Symptoms in a Nonsmoking Population," *Archives of Environmental Health*, Vol. 48, No. 1, 1993, pp. 33-46.
- [4] M. Borestein, L. V. Hedges, J. P. T. Higgins and H. R. Rothstein, " Introduction to Meta-Analysis," John Wiley and Sons, Ltd. Chichester, 2009.
- [5] L. G. Chestnut, J. Schwartz, D. A. Savitz, et al., " Pulmonary Function and Ambient Particulate Matter: Epidemiological Evidence from NHANES I," *Archives of Environmental Health*, Vol. 46, No. 3, 1991, pp. 135-144. doi:10.1080/00039896.1991.9937440

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[JEP Subscription](#)

[Most popular papers in JEP](#)

[About JEP News](#)

[Frequently Asked Questions](#)

[Recommend to Peers](#)

[Recommend to Library](#)

[Contact Us](#)

Downloads: 301,518

Visits: 674,017

Sponsors, Associates, and Links >>

- [The International Conference on Pollution and Treatment Technology \(PTT 2013\)](#)

- [6] B. Accardi and E. L. Palmieri, "L'atmosfera Terrestre e i suoi Problemi da II Globo Terrestre e la Sua Evoluzione," 3rd Edition, Bologna-Zanichelli Edizioni, Modena, 1991, pp. 273-307.
- [7] W. Jedrychowski and M. Krzyzanowski, "Ventilatory Lung Function and Chronic Chest Symptoms among the Inhabitants of Urban Areas with Various Levels of Acid Aerosols: Prospective Study in Cracow," *Environmental Health Perspectives*, Vol. 79, 1989, pp. 101-107. doi:10.1289/ehp.8979101
- [8] R. Van der Lende, T. Kok, R. Peset, H. Quanjer, J. P. Schouten and G. M. Orie, "Long-Term Exposure to Air Pollution and Decline in VC and FEV1: Recent Results from a Longitudinal Epidemiologic Study in the Netherlands," *Chest*, Vol. 80, No. S1, 1981, pp. 23-26.
- [9] E. Björnsson, P. Plaschke, E. Norrman, C. Janson, B. Lundbäck, A. Rosenhall, N. Lindholm, L. Rosenhall, E. Berglund and G. Boman, "Symptoms Related to Asthma and Chronic Bronchitis in Three Areas of Sweden," *European Respiratory Journal*, Vol. 7, No. 12, 1994, pp. 2146-2153.
- [10] M. Boezen, J. Schouten, B. Rijcken, J. Vonk, J. Gerritsen, S. Van Der Zee, G. Hoek, B. Brunekreef and D. Postma, "Peak Expiratory Flow Variability, Bronchial Responsiveness, and Susceptibility to Ambient Air Pollution in Adults," *American Journal of Respiratory and Critical Care Medicine*, Vol. 158, 1998, pp. 1848-1854.
- [11] M. L. Burr, G. Karani, B. Davies, B. A. Holmes and K. L. Williams, "Effects on Respiratory Health of a Reduction in Air Pollution from Vehicle Exhaust Emissions," *Occupational and Environmental Medicine*, Vol. 61, No. 3, 2004, pp. 212-218. doi:10.1136/oem.2002.003244
- [12] B. P. Chattopadhyay, A. Mukherjee, K. Mukherjee and A. Roychowdhury, "Exposure to Vehicular Pollution and Assessment of Respiratory Function in Urban Inhabitants," *Lung*, Vol. 185, No. 5, 2007, pp. 263-270. doi:10.1007/s00408-007-9015-0
- [13] G. Devereux, T. Ayatollahi, R. Ward, C. Bromly, S. J. Bourke, S. C. Stenton and D. J. Hendrick, "Asthma, Airways Responsiveness and Air Pollution in Two Contrasting Districts of Northern England," *Thorax*, Vol. 51, No. 2, 1996, pp. 169-174.
- [14] H. Fereidoun, M. S. Nourddin, N. A. Rzezaei, A. Mohsen, R. Ahmad and H. Pouria, "The Effect of Long-Term Exposure to Particulate Pollution on the Lung Function of Teheranian and Zanjanian Students," *Pakistan Journal of Physiology*, Vol. 3, No. 2, 2007.
- [15] K. Kumar, C. E. Prasad, N. Balakrishna, K. Visweswara Rao and P. U. M. Reddy, "Respiratory Symptoms and Spirometric Observations in Relation to Atmospheric Pollutants in a Sample of Urban Population," *Asia-Pacific Journal of Public Health*, Vol. 12, No. 2, 2000, p. 58. doi:10.1177/101053950001200202
- [16] K. Sekine, M. Shima, Y. Nitta and M. Adachi, "Long Term Effects of Exposure to Automobile Exhaust on the Pulmonary Function of Female Adults in Tokyo, Japan," *Occupational and Environmental Medicine*, Vol. 61, No. 4, 2004, pp. 350-357. doi:10.1136/oem.2002.005934
- [17] L. Sichletidis, I. Tsiotsios, A. Gavriilidis, D. Chloros, I. Kottakis, E. Daskalopoulou and T. Konstantinidis, "Prevalence of Chronic Obstructive Pulmonary Disease and Rhinitis in Northern Greece," *Respiration*, Vol. 72, No. 3, 2005, pp. 270-277.
- [18] J. Sunyer, D. Jarvis, T. Gotschi, R. Garcia-Esteban, B. Jacquemin, I. Aguilera, U. Ackerman, R. de Marco, B. Forsberg, T. Gislason, J. Heinrich, D. Norback, S. Villani and N. Kunzli, "Chronic Bronchitis and Urban Air Pollution in an international Study," *Occupational and Environmental Medicine*, Vol. 63, No. 12, 2006, pp. 836-843. doi:10.1136/oem.2006.027995
- [19] S. C. Van der Zee, G. Hoek, M. H. Boezen, J. P. Schouten, J. H. van Wijnen and B. Brunekreef, "Acute Effects of Air Pollution on Respiratory Health of 50±70 Yr Old Adults," *Eur Respir J*, Vol. 15, No. 4, 2000, pp. 700-709. doi:10.1034/j.1399-3003.2000.15d13.x
- [20] D. J. VanderJagt, K. D. McClung, H. A. Kassam, M. S. Harkins and R. H. Glew, "Pulmonary Function of Herdsmen," *Journal of the National Medical Association*, Vol. 96, No. 4, 2004, pp. 550-555.
- [21] G. Viegi, P. Paoletti, L. Carrozzi, M. Vellutini, E. Diviggiano, C. Di Pede, G. Pistelli, G. Giutini and M. D. Lebowitz, "Prevalence Rates of Respiratory Symptoms in Italian General Population Samples Exposed to Different Levels of Air Pollution," *Environmental Health Perspectives*, Vol. 94, 1991, pp. 95-99. doi:10.2307/3431299
- [22] G. Viegi, M. Pedreschi, S. Baldacci, L. Chiaffari, F. Pistelli, P. Modena, M. Vellutini, F. Di Pede and L. Carrozzi, "Prevalence Rates of Respiratory Symptoms and Diseases in General Population Samples of North and Central Italy," *The International Journal of Tuberculosis and Lung Disease*, Vol. 3, No.

