

## REFERENCES

- Air Resources Laboratory (ARL). [online]. Available  
<http://ready.arl.noaa.gov/HYSPLIT.php> (21 August 2010)
- Badger, G.M., 1962. Mode of formation of carcinogens in human environment. National Cancer Institute Monographs 9(1).
- Bailey, D., Solomon, G. 2004. Pollution prevention at ports: clearing the air. *Environment Impact Assessment* 24, 749–774.
- BEC, Biomass Energy Centre. Surrey, 2008, [online]. Available  
[www.biomassenergycentre.org.uk](http://www.biomassenergycentre.org.uk). (14 August 2012)
- Beegle, L.W., Wdowiak, T.J., Harrison, J.G., 2001. Hydrogenation of polycyclic aromatic hydrocarbons as a factor affecting the cosmic 6.2 micron emission band. *Spectrochim Acta Part A* 57, 737-744.
- Brajer, V., Mead, R.W., Xiao, F., 2006. Valuing the health impacts of air pollution in Hong Kong. *Journal Asian Economic* 17, 85–102.
- Boonyatumanond, R., Murakami. M., Wattayakorn, G., Togo, A., and Takada, H., 2007. Sources of polycyclic aromatic hydrocarbons (PAHs) in street dust in a tropical Asian mega-city, Bangkok, Thailand. *Science of the Total Environment* 384, 420–432.
- Bouroute, C., Fortic, M.C., Taniguchi, S., Bicego, M.C., Lotufo, P.A., 2005. A winter time study of PAHs in fine and coarse aerosols in Sao Paulo city, Brazil. *Atmospheric Environment* 39, 3799–811.

- Bzdusek, P.A., Christensen, E.R., Li, A., Zou Q.M., 2004. Source apportionment of sediment PAHs in Lake Calumet, Chicago: application of factor analysis with nonnegative constraints. *Environmental Science Technology* 38, 97-103.
- Cecinato, A., 1997. Polynuclear aromatic hydrocarbons (PAH), Benz(a)pyrene (BaPY) and nitrated-PAH (NPAH) in suspended particulate matter. *Annali di Chimica*, 87, 483-496.
- Chantara, S., Sangchan, W., 2009. Sensitive analytical method for particle-bound polycyclic aromatic hydrocarbons: A case study in Chiang Mai, Thailand. *Science Asia* 35, 42-48.
- Chiang Mai Office. 2012. [online]. Available <http://www.chiangmai.go.th/newweb/main/> (12 March 2012).
- Chagger, H.K., Jones, J.M., Pourkashanian, M., Williams, A., 2000. The formation of VOC, PAH and dioxins during incineration. *Process Safety and Environmental Protection* 78 (B1), 53-59.
- Chagger, H.K., Kendall, A., McDonald, A., Pourkashanian, M., Williams, A., 1998. Formation of dioxins and other semi-volatile organic compounds in biomass combustion. *Applied Energy* 60, 101-114.
- Chang, K., Fang, C., Chen, J., and Wu, Y., 2006. Atmospheric polycyclic aromatic hydrocarbons (PAHs) in Asia: A review from 1999 to 2004. *Environmental Pollution* 142, 388-396.
- Chantara, S., Wangkarn, S., Sangchan, W., Rayanakorn, M., 2010. Spatial and temporal variations of ambient PM10-bound polycyclic aromatic hydrocarbons in Chiang Mai and Lamphun Provinces, Thailand. *Desalination and Water Treatment* 19, 17-25.

Chow, J.C., Watson, J.G., Crow, D., Lowenthal, D.H., and Merrifield, T.M., 2001. Comparison of IMPROVE and NIOSH carbon measurements. *Aerosol Science Technology* 34(1), 23-34.

Chow, J.C., Watson, J.G., Chen, L.-W.A., Arnott, W.P., Moosmüller, H., Fung, K.K., 2004. Equivalence of elemental carbon by Thermal/Optical Reflectance and Transmittance with different temperature protocols. *Environmental Science Technology* 38(16), 4414-4422.

Chuersuwan, N., Nimrat, S., Lekphet, S. and Kerdkumrai, T., 2008. Levels and major Sources of PM<sub>2.5</sub> and PM<sub>10</sub> in Bangkok Metropolitan Region. *Environment International* 34, 671-677.

Caricchia, A.M., Chiavarini, S., Pezza, M., 1999. Polycyclic aromatic hydrocarbons in the urban atmospheric particulate matter in the city of Naples (Italy). *Atmospheric Environment* 33, 3731-3738.

Cartera, W.P., Cocker, D. R., Fitza, D.R., Malkinaa, I.L., Bumillera, K., Sauera, C.G., John P. T., Bufalinoa, C., and Song, C., 2005. A new environmental chamber for evaluation of gas-phase chemical mechanisms and secondary aerosol formation. *Atmospheric Environment* 39, 7768–7788.

Coutant, R.W., Callahan, P.J., Chuang, J.C., Lewis, R.G., 1992. Efficiency of silicone-grease coated denuders for collection of polynuclear aromatic hydrocarbons. *Atmospheric Environment* 26A, 2831-2834.

Coutant, R.W., Callahan, P.J., Kuhlman, M.R., Lewis, R.G., 1989. Design and performances of a high volume compound annular denuder. *Atmospheric Environment* 23, 2205-2211.

- Coutant, R.W., Brown, L., Chuang, J.C., Riggin, R.M., Lewis, R.G., 1998. Phase distribution and artifact formation in ambient air sampling for polynuclear aromatic hydrocarbons. *Atmospheric Environment* 22, 403–409
- Communities CotE, 2001. Proposal for a Directive of the European Parliament and of the Council on the Promotion of the Use of Biofuels for Transport. 2001/0265 (COD), Brussels.
- Dickhut, R.M., Canuel, E.A., Gustafson, K.E., Liu, K., Arzayus, K.M., Walker, S.E., 2000. Automotive sources of carcinogenic polycyclic aromatic hydrocarbons associated with particulate matter in the Chesapeake Bay Region. *Environmental Science Technology* 34(17), 4635-4640.
- Department of Local Administration. 2012. [online]. Available [http://www.dopa.go.th/stat/y\\_stat51.html](http://www.dopa.go.th/stat/y_stat51.html) (12 August 2012)
- Dontree, S., Thumtakob, S., Chamnivikaipong, P., Noisuya, S., 2011. The priorities of the burning area from multiple sources of land use for awareness and prevention of open burning in Chiang Mai. The report of the Thai Health Promotion Foundation, 161-173. (In Thai)
- Dvorská, A., Lammel, G., Klánová, J., 2011. Use of diagnostic ratios for studying source apportionment and reactivity of ambient polycyclic aromatic hydrocarbons over Central Europe. *Atmospheric Environment* 45, 420-427.
- Fang, M., Zheng, M., Wang, F., To, K.L., Jaafar, A.B., and Tong, S.L., 1999. The solvent extractable organic compounds in the Indonesian biomass burning aerosols characterization study. *Atmospheric Environment* 33, 783-795.
- Fang, S.H., Chen, H.W., 1996. Air quality and pollution control in Taiwan. *Atmospheric Environment* 30, 735–741.
- Fenger, J. 1999. Urban air quality. *Atmospheric Environment* 33, 4877–4900.

- Frenklach, M., Wang, H., 1991. Detailed modeling of soot particle nucleation and growth, *Proceedings of Combustion Institute* 23, 1559–1566.
- Galarneau, E., 2008. Source specificity and atmospheric processing of airborne PAHs: implications for source apportionment. *Atmospheric Environment* 42, 8139–8149.
- Fenger, J., 2009. Air pollution in the last 50 years – From local to global. *Atmospheric Environment* 43, 13-22.
- Faaij, A., Wijk, A., van Doorn, J., Curvers, T., Waldheim, L., Olsson, E. & Daey-Ouwens, C. 1997. Characteristics and availability of biomass waste and residues in The Netherlands for gasification. *Biomass and Bioenergy* 12(4), 225-240.
- Faaij, A.P.C., 2004. Biomass combustion. Encyclopedia of Energy 1, 175 – 191. *Biomass & Bioenergy* 12(4), 225–240.
- Fang, G., Chang, K.F., Lu, C., Bai, H., 2004. Estimation of PAHs dry deposition and BaP toxic equivalency factors (TEFs) study at Urban, Industry Park and rural sampling sites in central Taiwan, Taichung. *Chemosphere* 55, 787-796.
- Fire Information for Resource Management System (FIRMS). [online]. Available <http://firefly.geog.umd.edu/firms/>
- Freeman, D.J. and Catell, F.C.R., 1990. Wood burning as a source of atmospheric polycyclic aromatic hydrocarbons. *Environmental Science and Technology* 24, 1581–1585.
- Godoi, A.F.L., Ravindra, K., Godoi, R.H.M., Andrade, S.J., Santiago-Silva, M., Van Vaeck, L., and Van Grieken, R., 2004. Fast Chromatographic determination of polycyclic aromatic hydrocarbons in aerosol samples from sugar cane burning. *Journal of Chromatography A* 1027, 49–53.

- Guo, H., Lee, S.C., Ho, K.F., Wang, X.M., Zou, S.C., 2003. Particle-associated polycyclic aromatic hydrocarbons in urban air of Hong Kong Original. *Atmospheric Environment* 37, 5307-5317.
- Harrison, R.M., Smith, D.J.T., Luhana, L., 1996. Source apportionment of atmospheric polycyclic aromatic hydrocarbons collected from an urban location in Birmingham, UK. *Environmental Science Technology* 30, 825-832.
- Hays, M.D., Fine, P.M., Geron, C.D., Kleeman, M.J., and Gullett, B.K., 2005. Open burning of agricultural biomass: physical and chemical properties of particle-phase emissions. *Atmospheric Environment* 39, 6747–6764.
- He, L.Y., Hu, M., Huang, X.F., Yu, B.D., Zhang, Y.H., Liu, D.Q., 2004. Measurement of emissions of fine particulate organic matter from Chinese cooking. *Atmospheric Environment* 38, 6557-6564.
- Huizenga, C., Ajero, M., Fabian, H., 2004. Benchmarking urban air quality management in Asian cities. Presented at 13th World Clean Air and Environmental Protection Congress and Exhibition, London, UK, August 22
- Hussein, T., Kubincova, L., Dzumbova, L., Hruska, A., Dohanyosova, P., Hemerka, J., and Smolik, J., 2009. Deposition of aerosol particles on rough surfaces inside a test chamber. *Building and Environment* 44, 2056–2063.
- Jaikamsueb, T. 2007. Economic and Financial Reports in Northern Thailand.
- Jenkins, B.M., Jones, A.D., Turn, S.Q., Williams, R.B., 1996. Particle concentrations, gas-particle partitioning, and species intercorrelations for Polycyclic Aromatic Hydrocarbons (PAHs) emitted during biomass burning. *Atmospheric Environment* 30, 3825-3835.
- Jenkins, B.M., Baxter, L.L., Miles Jr., T.R., Miles, T.R., 1998. Combustion properties of biomass. *Fuel Processing Technology* 54 (1–3), 17–46.

- Jia, Y., Stone, D., Wang,W., Schrlau, J., Tao, S., & Simonich, S. L. M., 2011. Estimated reduction in cancer risk due to PAH exposures if source control measures during the 2008 Beijing Olympics were sustained. *Environmental Health Perspectives* 119, 815-820.
- Kakareka, S.V. and Kukharchyk, T.I., 2003. PAH emission from the open burning of agricultural debris. *The Science of the Total Environment* 308, 257–261.
- Kannan, G. K., Gupta, M., Kapoor, J. C., 2005. Estimation of gaseous products and particulate matter emission from garden biomass combustion in a simulation fire test chamber. *Atmospheric Environment* 39, 563-573.
- Kavouras, I.G., J. Lawrence, P. Koutrakis, E.G., Stephanou, P. Oyola 1999. Measurement of particulate aliphatic and polynuclear aromatic hydrocarbons in Santiago de Chile: source reconciliation and evaluation of sampling artifacts. *Atmospheric Environment* 33, 4977-4986.
- Keshtkar, H., Ashbaug, L.L., 2007. Size distribution of polycyclic aromatic hydrocarbon particulate emission factors from agricultural burning. *Atmospheric Environment* 41, 2729-2739.
- Khalili, N.R., Scheff, P.A., Holsen, T.M.,1995. PAH source fingerprints for coke oven, diesel and gasoline engines, highway tunnels and wood combustion emission. *Atmospheric Environment* 19(3), 533-542.
- Kim Oanh, N.T., Ly, B.T., Tipayarom, D., Manandhar, B.R., Prapat, P., Simson, C.D., Sally Liu, L.-J., 2011. Characterization of particulate matter emission from open burning of rice straw. *Atmospheric Environment* 34, 4557-4563.
- Kim Oanh, N.T., Reutergårdh, L.B., Dung, N.T., Yu, M.H., Yao, W.X., Co, H.X., 2000. Polycyclic aromatic hydrocarbons in the airborne particulate matter at a

location 40 km north of Bangkok, Thailand. *Atmospheric Environment* 34, 4557-4563.

Kong, S.F., Ding, X., Bai, Z.P., Han, B., Chen, L., Shi, J.W., Li , Z.Y., 2010. Seasonal study of polycyclic aromatic hydrocarbons in PM<sub>2.5</sub> and PM<sub>2.5-10</sub> in five typical cities of Liaoning Province, China. *Journal Hazardous Material* 18, 70-80.

Koppmann, R., Czapiewski., K.V., Reid, J.S., 2005. A review of biomass burning emissions, part I: gaseous emissions of carbon monoxide, methane, volatile organic compounds, and nitrogen containing compounds. *Atmospheric Chemistry Physic Discussion* 5, 10455-10516.

Korenaga, T., Liu, X., Huang, Z., 2001. The influence of moisture content on polycyclic aromatic hydrocarbons emission during rice straw burning. *Chemosphere - Global Change Science* 3, 117-122.

Kumata, H., Uchida, M., Sakuma, E., Uchida, T., Fujiwara, K., Tsuzuki, M., Yoneda, M., and Shibata, Y., 2006. Compound class specific C-14 analysis of polycyclic aromatic hydrocarbons associated with PM10 and PM1.1 aerosols from residential areas of suburban Tokyo. *Environmental Science and Technology* 40, 3474–3480.

Lane, D.A., Gundel, L., 1996. Gas and particle sampling of airborne polycyclic aromatic compounds. *Polycyclic Aromatic Compounds* 9, 67-74.

Larkin, S.B.C., Lee, M., McInnes, G., Sharp, M., and Simmonds, A.C., 1986. The measurement of air pollution and other factors relating to the practice of straw and stubble burning. Warren Spring Laboratory Report LR 518 (AP) M, Stevenage, Herts, UK.

- Larsen, R. and Baker, J., 2003. Source Apportionment of Polycyclic Aromatic Hydrocarbons in the Urban Atmosphere: A Comparison of Three Methods. *Environmental Science Technology* 37, 1873-1881.
- Law, C.K., 2006. Combustion Physics, Cambridge University Press, New York.
- Lim, L.L., Hughes, S.J., Hellawell, E.E., 2005. Integrated decision support system for urban air quality assessment. *Environmental Modelling & Software* 20, 947–954.
- Lindstedt, P., Maurice, L., Meyer, M., 2001. Thermodynamic and kinetic issues in the formation and oxidation of aromatic species. *Faraday Discussions* 119, 409–432.
- Liu, K., Han, W., Pan, W.P., Riley, J.T., 2001a. Polycyclic aromatic hydrocarbon (PAH) emissions from a coal-fired pilot FBC system. *Journal of Hazardous Materials* B84, 175–188.
- Liu, Y.J., Zhu, L.Z., Shen, X.Y., 2001b. Polycyclic aromatic hydrocarbons (PAHs) in indoor and outdoor air of Hangzhou, China. *Environmental Science & Technology* 35, 840-844.
- Mader, B.T., Pankow, J.F., 2001. Gas/solid partitioning of semivolatile organic compounds (SOCs) to air filters. 3. An analysis of gas adsorption artifacts in measurements of atmospheric SOCs and organic carbon (OC) when using teflon membrane filters and quartz fiber filters. *Environmental Science and Technology* 35, 3422-3432.
- Mao, X., Guo, X., Chang, Y., Peng, Y. 2005. Improving air quality in large cities by substituting natural gas for coal in China: changing idea and incentive policy implications. *Energy Policy* 33, 307–318.

- Masih, J., Singhvi, R., Taneja, A., Kumar, K., Masih, H., 2012. Gaseous/particulate bound polycyclic aromatic hydrocarbons (PAHs), seasonal variation in North central part of rural India. *Sustainable Cities and Society* 3, 30–36.
- Mastral, A.M., Callen, M., Mayoral, C., Galban, J., 1995. Polycyclic aromatic hydrocarbon emissions from fluidized-bed combustion of coal. *Fuel* 74(12), 1762–1766.
- Mastral, A.M. Callen, Murillo, M. Garcia, R.T., 1998. Assessment of PAH emissions as a function of coal combustion variables in fluidized bed. 2. Air excess percentage, *Fuel* 77 (13), 1513–1516.
- Mastral, A.M., Callen, M. Murillo, R., 1996. Assessment of PAH emissions as a function of coal combustion variables, *Fuel* 75(13), 1533–1536.
- Mastral, A.M., Callen, M.S., 2000a. A review a polycyclic aromatic hydrocarbon (PAH) emissions from energy generation. *Environmental Science & Technology* 34(15), 3051–3057.
- Mastral, A.M., Callen, M.S., Garcia, T., 2000b. Toxic organic emissions from coal combustion. *Fuel Processing Technology* 67 (1), 1–10.
- Ma, W.L., Li, Y.F., Qi, H., Sun, D.Z., Liu, L.Y., Wang, D.G., 2010. Seasonal variations of sources of polycyclic aromatic hydrocarbons (PAHs) to a northeastern urban city, China. *Chemosphere* 79, 441-447.
- Manahan, S.E., 1991. Environmental Chemistry. Lewis Publishers, Chelsea, MI.
- McDow, S.R., Huntzicker, J.J., 1990. Vapor adsorption artifact in sampling of organic aerosol: face velocity effects. *Atmospheric Environment* 24A, 2563-2571.
- McMurtry, P.H., 2000. A review of atmospheric aerosol measurements. *Atmospheric Environment* 34, 1959-1999.

- Nielsen, T., 1996. Traffic contribution of polycyclic aromatic hydrocarbons in the center of a large city. *Atmospheric Environment*; 30, 3481-3490.
- Nisbet, I.C.T., LaGoy, P.K., 1992. Toxic equivalency factors (TEFs) for polycyclic aromatic hydrocarbons (PAHs). *Regular Toxicology Pharmacology* 16, 290-300.
- Northern Meteorological Center. 2012. [online]. Available <http://www.cmmet.tmd.go.th> (7 August 2012)
- Norramit, P., Cheevaporn, V., Itoh, N., Tanaka, K., 2005. Characterization an carcinogenic risk assessment of polycyclic aromatic hydrocarbons in the respirable fraction of airborne particle in Bangkok metropolitan area. *Journal Health Science* 51, 437-446.
- Office of Chiang Mai Agriculture, Chiang Mai, 2010. [online]. Available <http://www.chiangmai.doae.go.th> (15 August 2012)
- O'Malley, V. 1999. The integrated pollution prevention and control IPPC directive and its implications for the environment and industrial activities in Europe. *Sensors and Actuators B* 59, 78–82.
- Orecchio, S., Paradiso, V., Culotta, C. L., 2009. Polycyclic aromatic hydrocarbons (PAHs) in coffee brew samples: Analytical method by GC-MS, profile, levels and sources. *Food and Chemical Toxicology* 47(400), 819-826.
- Oros, D.R., Abas, M.R., Yousef, N., Omar, M.J., Rahman, N.A., Simoneit, R.T., 2006. Identification and emission factors of molecular tracers in organic aerosols from biomass burning: Part 3. Grasses. *Apply Geochemistry* 21, 919-940.

- Oudinet, J.P., Meline, J., Chelmicki, W., Sanak, M., Magdalena, D.W., Besancenot, J.P. 2006. Towards a multidisciplinary and integrated strategy in the assessment of adverse health effects related to air pollution: the case study of Cracow (Poland) and asthma. *Environmental Pollution*, 143 : 278–284.
- Park, S.S., Kim, Y.J., Kang, C.H., 2002. Atmospheric polycyclic aromatic hydrocarbons in Seoul, Korea. *Atmosphere Research*; 36: 2917-2924.
- Pengchai P, Chantara S, Sopajaree K, Wangkarn S, Tengcharoenkul U, Rayanakorn M. Seasonal variation, risk assessment and source estimation of PM<sub>10</sub> and PM<sub>10</sub>-bound PAHs in the ambient air of Chiang Mai and Lamphun, Thailand. *Environment Monitoring Assessment* 2008; 154: 197-218
- Pies, C., Hoffmann, B., Petrowsky, J., Yang, Y., Ternes, T.A., Hofmann, T., 2008. Characterization and source identification of polycyclic aromatic hydrocarbons (PAHs) in river bank soils. *Chemosphere* 72, 1594-1601.
- Pitts, J.N., Paur, H.R., Zielinska, B., Arey, J., Winer, A.M., Ramdahl, T., Mejia, V., 1986. Factors influencing the reactivity of polycyclic aromatic hydrocarbons adsorbed on filters and ambient POM ozone. *Chemosphere* 15, 675-685.
- Pollution Control Department (PCD). Retrieved from <http://www.pcd.go.th>
- Ravindra, K., Sokhi, R., Van Grieken, R., 2008a. Atmospheric polycyclic aromatic hydrocarbons: source attribution, emission factors and regulation. *Atmospheric Environment* 42, 2895-2921.
- Ravindra, K., Wauters, E., Van Grieken, R., 2008b. Variation in particulate PAHs levels and their relation with the transboundary movement of the air masses. *Science of the Total Environment* 396, 100-110.

- Riga-Karandinos, A.N., Saitanis, C. 2005. Comparative assessment of ambient air quality in two typical Mediterranean coastal cities in Greece. *Chemosphere*, 59, 1125-1136.
- Rogge, W.F., Hildemann, L.M., Mazurek, M.A., Cass, G.R., Simoneit, B.R.T., 1993. Sources of fine organic aerosols: 2. Noncatalyst and catalyst-equipped automobiles and heavy-duty diesel trucks. *Environment Science Technology* 27, 636-651.
- Ruchirawat, M., Mahidol, C., Tangjarukij, C., Pui-Ock, S., Jensen, O., Kampeerawipakorn, O., Tuntawiroon, J., Aramphongphan, A., Autrup, H., 2002. Exposure to genotoxins present in ambient air in Bangkok, Thailand—particle associated polycyclic aromatic hydrocarbons and biomarkers. *Science of the Total Environment* 287, 121–132.
- Sarkar, S., Khillare, P. S., 2011. Profile of PAHs in the inhalable particulate fraction: source apportionment and associated health risks in a tropical megacity. *Environment Monitoring and Assessment* DOI 10.1007/s10661-012-2626-9.
- Schauer, J., Rogge, W.F., Hildemann, L.M., Mazurek, M.A., Cass, G.R., 1996. Source apportionment of airborne particulate matter using organic compounds as tracers. *Atmospheric Environment* 30, 3837-3855.
- Schauer, C., Niessner, R., Poschl, U., 2003. Polycyclic aromatic hydrocarbons in urban air particulate matter: decadal and seasonal trends, chemical degradation and sampling artifacts. *Environmental Science and Technology* 37, 2861-2868.
- Schultz, T.P., Taylor, F.W., 1989. Wood. Gordon & Breach, New York.

- Schwartz, J., Dockery, D.W., Neas, L.M., 1997. Is daily mortality associated specifically with fine particles?. *Journal of Air and Waste Management Association* 46, 927–939.
- Simcik, M.F., Eisenreich, S.J., Lioy, P.J., 1999. Source apportionment and source/sink relationships of PAHs in the coastal atmosphere of Chicago and Lake Michigan. *Atmospheric Environment* 33, 5071-5079.
- Simoneit, B.R.T., 1999. A review of biomarker compounds as source indicators and tracers for air pollution. *Environmental Science and Pollution Research* 6 (3), 159–169.
- Simoneit, B.R.T., 2002. Biomass burning - a review of organic tracers for smoke from incomplete combustion. *Applied Geochemistry* 17, 129-162.
- Stockholm Environment Institute, 2008. Urban air pollution in Asia. Foundation Course on Air Quality Management in Asia. Sweden, Stockholm.
- Subramanian, R., Khlystov, A.Y., Cabada, J.C., and Robinson, A.L., 2004. Positive and negative artifacts in particulate organic carbon measurements with denuded and undenuded sampler configurations. *Aerosol Science Technology* 38(Suppl 1), 27-48.
- Tobiszewski, M., Namiesnik, J., 2012. PAH diagnostic ratios for the identification of pollution emission sources. *Environmental Pollution* 162, 110-119
- Tsapakis, M., Stephanou, E.G., 2003. Collection of gas and particle semi-volatile organic compounds: use of an oxidant denuder to minimize polycyclic aromatic hydrocarbons degradation during high-volume air sampling. *Atmospheric Environment* 37, 4935-4944.

- Turpin, B.J., Huntzicker, J.J., Hering, S.V., 1994. Investigation of organic aerosol sampling artifacts in the Los Angeles Basin. *Atmospheric Environment* 28(19), 3061-3071.
- US Environmental Protection Agency, 1993. Provisional guidance for quantitative risk assessment of polycyclic aromatic hydrocarbons. NC EPA-600/R-93/089. Research Triangle Park: US Environmental Protection Agency.
- Wang, W., Huang, M.J., Kang, Y., Wang, H.S., Leung, A.O.W., Cheung, K.C., Wong, M.H., 2011. Polycyclic aromatic hydrocarbons (PAHs) in urban surface dust of Guangzhou, China: status, sources and human health risk assessment. *Science of the Total Environment* 409, 4519-4527.
- Wang, Z., Chen, J., Yang, P., Tian, F., Qiao, X., Bian, H., Ge, L., 2009. Distribution of PAHs in pine (*Pinus thunbergii*) needles and soils correlates with their gas-particle partitioning. *Environmental Science & Technology* 43, 1336-1341.
- Watson, J.G., Chow, J.C., Chen, L.-W.A., 2005. Summary of organic and elemental carbon/black carbon analysis methods and intercomparisons. AAQR 5(1), 65-102.
- Williams, G.H., 1992. Fuel from biomass. *Chemical & Engineering News* 70 (47), 3-3.
- Williams, A., Pourkashanian, M., Jones, J.M., 2001. Combustion of pulverized coal and biomass. *Progress in Energy and Combustion Science* 27(6), 587-610.
- Wing, M.R., Bada, J.L., 1992. The origin of polycyclic aromatic hydrocarbons in meteorites. *Origins of Life and Evolution of the Biosphere* B; 21, 375-383.
- White, C.M., Lee, M.L., 1980. Identification and Geochemistrytical significance of some aromatic components of coal. *Geochimica Cosmochimica Acta* 44, 1825-1832.

- WHO. World Health Organization: Air Quality Guidelines for Europe. WHO Regional Publications 2000; European Series No. 91, second edition. WHO, Copenhagen.
- Wolf, C. 2002. Urban air pollution and health: an ecological study of chronic rhinosinusitis in Cologne, Germany. *Health & Place* 8, 129–139.
- World Bank. 2003. Thailand environment monitor 2002. Bangkok: Air quality.
- Yang, X., Okada, Y., Tang, N., Matsunaga, S., Tamura, K., Lin, J., Kameda, T., Toriba A., and Hayakawa, K., 2007. Long-range transport of polycyclic aromatic hydrocarbons from China to Japan. *Atmospheric Environment* 41, 2710–2718
- Yunker, M.B., Macdonald, R.W., Vingarzan, R., Mitchell, R.H., Goyette, D., Sylvestre, S., 2002. PAHs in the Fraser River basin: a critical appraisal of PAH ratios as indicators of PAH source and composition. *Organic Geochemistryistry* 33, 489-515.
- Zhang, Y., Tao, S., 2008. Seasonal variation of polycyclic aromatic hydrocarbons (PAHs) emission in China. *Environmental Pollution* 156, 657-663.
- Zhang, Y. and Tao, S., 2009. Global atmospheric emission inventory of polycyclic aromatic hydrocarbons (PAHs) for 2004. *Atmospheric Environment* 43, 812-819.