

Cunningham et al. Environmental Science: A Global Concern 11e
Further readings for Chapter 16 (air pollution)

Afroz, R., Hassan, M. N. and Ibrahim, 2003. N. A, .Review of air pollution and health impacts in Malaysia. Environmental Research 92, 71–77. doi:[10.1016/S0013-9351\(02\)00059-2](https://doi.org/10.1016/S0013-9351(02)00059-2)

Agrell, C. et al., 2004. “Polybrominated diphenyl ethers (PBDES) at a solid waste incineration plant I: Atmospheric concentrations” Atmospheric Environment 38 (30): 5139-5148. Comparison of atmospheric concentrations of PBDES near a solid waste incinerator and an asphalt plant suggest that waste incineration is the major source of “old” PBDES in the environment.

Alcamo, J, et al. 2002. “An integrated assessment of regional air pollution and climate change in Europe: findings of the AIR-CLIM Project.” Environmental Science and Policy 5 (4): 257-272. An overview of air pollution in Europe.

Ashley, Steven. 2007. “Diesels Come Clean.” Scientific American 269 (3): 80-89. Improved engines and exhaust scrubbers, combined with new fuel, will make energy-efficient diesels nearly as green as hybrids.

Ashley, Steven. 2001. “A low-pollution engine.” Scientific American 285 (6): 90-95. The homogeneous-charge compression-ignition engine (essentially a sophisticated diesel) may offer the best option for meeting exhaust emission standards.

Baldasano, J.M., et al. 2003. “Air quality data from large cities” The Science of the Total Environment. 307 (1-3): 141-165. Urban air quality has improved in many wealthy countries but gotten worse in much of the developing world.

Beevers, S. D., Carslaw, D. C., 2005. The impact of congestion charging on vehicle emissions in London. Atmospheric Environment 39, 1–5.
[doi:10.1016/j.atmosenv.2004.10.001](https://doi.org/10.1016/j.atmosenv.2004.10.001) Raising fees reduces pollution.

Berg, T, et al. 2001. “Atmospheric mercury species in the European Arctic: Measurements and modeling.” Atmospheric Environment. 35 (14): 2569-2582. Traces how mercury moves from industrial areas into the arctic.

Bermejo, V., et al. 2003. “Assessment of the ozone sensitivity of 22 native plant species from Mediterranean annual pastures based on visible injury.” Atmospheric Environment 37 (33): 4667-4677. Many native plants are susceptible to ozone.

Boubel, Richard W. et al. 1994. Fundamentals of Air Pollution 3rd ed.. Academic Press. A textbook on air pollution: elements, sources, effects, measurement, monitoring, and meteorology.

Bower, J. 2000. "The Dark Side of Light," Audubon 102 (2): 92-97. Light pollution is a threat to wildlife and may affect human health as well.

Browner, C. M. 1993. "Pollution Prevention: It's a Whole New Way of Doing Business," EPA Journal 19 (3): 6-8. The former head of the U.S. EPA urges businesses to reduce pollution production rather than try "end of the pipe" solutions.

Brimblecombe, P. 1987. *The Big Smoke: A History of Air Pollution in London since Medieval Times*. Methuen Pub. Air pollution isn't a new urban problem.

Castleman, M. 1993. "This Place Makes Me Sick," Sierra 78 (5): 106-109. Chemicals evaporating from perfumes, correction fluids, household cleaners, and building materials can contribute to the "sick house syndrome."

Castro, T. S. et al. 2001. "The influence of aerosols on photochemical smog in Mexico City" Atmospheric Environment 35 (10): 1765-1772. A study of air pollution in the world's biggest city. Also see article in this issue on the regional air quality impact of Mexico City.

Charlson, R. J. 1994. "Sulfate Aerosol and Climatic Change," Scientific American 270 (2): 48-55. Sulfur particles scatter light and cool the atmosphere. Reducing air pollution could exacerbate global warming.

Clark, K.L., et al. 1998. "Cloud water and precipitation chemistry in a tropical montane forest, Monteverde, Costa Rica. Atmospheric Environment 32: 1595-1603.

Commoner, B., et al. 2000. "Long-range air transport of dioxin from north American sources to ecologically vulnerable receptors in Nunavut, arctic Canada." Final Report to the North American Commission for Environmental Cooperation, Available at <http://www.cec.org>,

Cone, Marla. 2005. *Silent Snow: The Slow Poisoning of the Arctic* Grove Press. Contaminants from industrial countries far to the south are carried by air currents to the Arctic, where they are concentrated in top predators, including people.

Cooper, C. David, 1994. *Air Pollution Control : A Design Approach*. Waveland Press. An overview of air pollution control engineering intended for professionals.

Davis, Devra. 2002. *When Smoke Ran Like Water: Tales of Environmental Deception and the Battle against Pollution*. Basic Books. The author shows instances in which science has been manipulated for corporate gain and at the expense of citizens' health.

Dawn Pier, M., et al. 2002. "Patterns of contamination among vascular plants exposed to local sources of polychlorinated biphenyls in the Canadian Arctic and Subarctic" The Science of the Total Environment. 297 (1-3): 215-227. Persistent toxins are carried by long-distance transport to remote areas.

Devotta, S., et al. 2004. "Challenges in recovery and recycling of refrigerants from Indian refrigeration and air-conditioning service sector." *Atmospheric Environment* 38 (6): 845-854. Containing chlorofluorocarbons in developing countries isn't easy.

Do, Y. S. et al. "2003 Role of *Rhodospirillum rubrum* sp. strain PS9, a purple non-sulfur photosynthetic bacterium isolated from an anaerobic swine waste lagoon, in odor remediation." *Applied and Environmental Microbiology* 69: 1710 - 1720. A purple bacterium could make pig farms smell sweeter.

Douglas, T.A. and M. Sturm. 2004. "Arctic haze, mercury and the chemical composition of snow across northwestern Alaska." *Atmospheric Environment* 38 (6): 805-820. Industrial pollutants are concentrated in the Arctic by long-range transport.

Earth Island. 1997. "The World's Least-Polluting Cars," *Earth Island Journal* 12 (2): 27. Britain's Ethical Consumer magazine rates autos for energy efficiency.

Ebinghaus, R., et al. 2002. "Antarctic springtime depletion of atmospheric mercury." *Environmental Science and Technology* 36(March 15):1238-1244. Ozone helps convert elemental mercury into a more reactive form.

Elsom, Derek. 1996. *Smog Alert: Managing Urban Air Quality*. Island Press. An overview of the problem of urban smog.

Environmental Protection Agency. 1996. "National Ambient Air Quality Standards for Ozone and Particulate Matter," *Federal Register* 61 (114): 29719-29725. Official standards for ambient ozone levels.

Esterbrook, Greg. 1994. "Forget PCB's, Radon, Alar: The World's Greatest Environmental Dangers Are Dug Smoke and Dirty Water." *The New York Times Magazine* September 11, 1994 - 60-63. Still valid after all these years.

Fischhoff, B. 1991. "Report from Poland: Science and Politics in the Midst of Environmental Disaster," *Environment* 33, no. 2:21. Decades of neglect and oppression created an environmental disaster in Eastern Europe. Although conditions have improved now, it's important to understand what they were.

Florig, H.K. 1997. "China's Air Pollution Risks." *Environmental Science and Technology* 31(6): 276-279. A good summary of air quality in China.

Fox, Susan and Robert A. Mickler. 1995. *Impact of Air Pollutants on Southern Pine Forests*. Springer-Verlag Telos. A summary of research on air pollution and forest health.

French, H. F. 1991. "Restoring Eastern European and Soviet Environments," *State of the World 1991*. Worldwatch Institute. Environmental reconstruction of Eastern Europe and the former Soviet Union remains a huge problem.

Fuller, Gary W. and David Green. 2004. "The impact of local fugitive PM10 from building works and road works on the assessment of the European Union Limit Value" Atmospheric Environment 38 (30): 4993-5002. In London as much as half of all particulate air pollution is from road and building construction.

Fupgren, Arthur R. 1996. "Night Blindness," The Amicus Journal 17 (4): 22-24. Light pollution interferes with astronomy and changes our experience of nature.

Gao, R. S. et al. 2004. "Evidence that nitric acid increases relative humidity in low-temperature cirrus clouds." Science 303: 516 – 520. Pollution from fossil fuel combustion reduces the formation of icy clouds and changes the earth's albedo.

Gent, J.F., et al. 2003. "Association of low-level ozone and fine particles with respiratory symptoms in children with asthma." Journal of the American Medical Association 290: 1859-1867. Evidence that asthma may be triggered by air pollution.

Gibbs, W. Wayt. 1995. "The Treaty that Worked-Almost," Scientific American 273 (3): 18-19. Analysis of the ozone convention.

Godish, Thad. 1995. Sick Buildings: Definition, Diagnosis, and Mitigation. Island Press. A good discussion of indoor air problems.

Graedel, T. E., and P. J. Crutzen. 1989. "The Changing Atmosphere," Scientific American 261 (3): 58-66. Describes how human activities are polluting the atmosphere.

Gros, V., Sciare, J., Yu, T., 2007. Air-quality measurements in megacities: Focus on gaseous organic and particulate pollutants and comparison between two contrasted cities, Paris and Beijing, C. R. Geoscience 339, 764–774. [doi:10.1016/j.crte.2007.08.007](https://doi.org/10.1016/j.crte.2007.08.007)

Guo, J., et al. 2004. "A mechanism for the increase of pollution elements in dust storms in Beijing." Atmospheric Environment 38 (6): 855-862. Dust particles trap pollutants and transport them to distant locations.

Hansen, J., and L. Nazarenko 2004. "Soot climate forcing via snow and ice albedoes." Proc. Natl. Acad. Sci. 101: 423-428. Soot darkens snow and causes more solar absorption.

Harvey, L. D. 1993. "Tackling Urban CO2 Emissions in Toronto," Environment 35 (7): 16-22. While many national governments are arguing about global warming, some cities have joined the Urban CO2 Project to reduce greenhouse gas emissions.

Hedin, Lars O and Gene E. Likens. 1996. "Atmospheric Dust and Acid Rain," Scientific American 275 (6): 88-92. Alkaline dust is neutralizing atmospheric acids and reducing acidic precipitation.

Hutchinson, K.D., et al. 2004. "The use of MODIS data and aerosol products for air quality prediction" *Atmospheric Environment* 38 (30): 5057-5070. An interesting application of satellite imagery to study regional air pollution.

Ilacqua, V. , et al. 2003. "The historical record of air pollution as defined by attic dust." *Atmospheric Environment* 37 (17): 2379-2389. Analysis of pollutant accumulation in the arctic gives us a picture of historic emissions.

Jacobson, Mark Z.. 2007. "Effects of Ethanol (E85) versus Gasoline Vehicles on Cancer and Mortality in the United States." *Environ. Science and Technology* 2007; 18-Apr-2007; DOI: [10.1021/es062085v](https://doi.org/10.1021/es062085v). Computer models predict that ethanol will produce more ozone and air-borne carcinogens than gasoline.

Jacobson, Mark Z. 2002. *Atmospheric Pollution History, Science, and Regulation*. Cambridge University Press. A broad, interdisciplinary look at air pollution.

Jin Xu et al. 2002. "Measurement of aerosol chemical, physical and radiative properties in the Yangtze delta region of China" *Atmospheric Environment* 36 (2): 161-173. Air pollution is shown to have a significant impact on visibility, climate, crop production, and human health near Shanghai

Johnson, J. 2002. "Too much of a bad thing: As U.S. companies end mercury use, questions mount over need to limit world access to surplus." *Chemical & Engineering News* 80(July 29):22-23. Rather than sell surplus mercury cheaply to the developing world where pollution controls are lax or non-existent, companies are urged to store it permanently.

Kaiho, K. et al. 2001. End-Permian catastrophe by a bolide impact: evidence of a gigantic release of sulfur from the mantle. *Geology* 29: 815-818. Suggests that an asteroid impact killed 95 percent of all species at the end of the Permian.

Kammen, Daniel. "Cookstoves for the Developing World," 1995. *Scientific American* 273 (1): 72-75. Inexpensive but efficient cookstoves could cut air pollution and save energy for billions of people.

Kang, D., et al. 2004. "Observed and modeled VOC chemistry under high VOC/NO_x conditions in the Southeast United States national parks" *Atmospheric Environment* 38 (29): 4969-4974. Ozone production is suppressed in areas with high volatile organic concentrations and low levels of nitrogen oxides.

Keith, Lawrence H. and Mary M. Walker. 1995. *Handbook of Air Toxics: Sampling, Analysis, and Properties*. Lewis Publishers. Detailed information on toxics and the laws that regulate them.

Koren, Ilan, et al. 2006. "The Bodélé depression: a single spot in the Sahara that provides most of the mineral dust to the Amazon forest." *Environmental Research Letters*. 1 (October–December 2006) 014005 doi:10.1088/1748-9326/1/1/014005. The bed of the former Lake Chad provides more than half the dust that falls on Amazonia.

Krol, M. C. et al. 2003. "Continuing emissions of methyl chloroform from Europe." *Nature* 421: 131 – 135. Surprise sources of ozone-depleting methyl chloroform found in Europe.

Krupa, Sagar V. 1997. *Air Pollution, People, and Plants: An Introduction*. St. Paul, MN: The American Phytopathological Society. Comprehensive coverage of the causes and effects of air pollution.

Kuik, O. J. et al. 2000. "The economic benefits to agriculture of a reduction of low-level ozone pollution in the Netherlands." *European Review of Agricultural Economics* 27 (1): 75-90. Ambient ozone reduces crop yields.

Kumar, S. et al. 2004. "Qualitative assessment of methane emission inventory from municipal solid waste disposal sites: a case study" *Atmospheric Environment* 38 (29): 4921-4929. Municipal solid waste disposal in developing countries is a major source of climate-changing methane gas emissions.

Kunhikrishnan, T., et al. 2004. "Analysis of tropospheric NO_x over Asia using the model of atmospheric transport and chemistry (MATCH-MPIC) and GOME-satellite observations." *Atmospheric Environment* 38 (4): 581-596. Remote sensing can help trace long-distance transport of air pollutants.

Lee, Shun Cheng, et al. 2002. "Investigation of indoor air quality at residential homes in Hong Kong: A case study." *Atmospheric Environment* 36 (2): 225-237. Smoking, cooking, and other activities have negative impacts on indoor air.

Lelieveld, Jos, et al. 2001. "The Indian Ocean experiment: Widespread air pollution from South and Southeast Asia." *Science* 291: 1031-1036. A huge blob of polluted air covers much of the Indian Ocean.

Lents, J. M. and W. J. Kelly. 1993. "Clearing the air in Los Angeles," *Scientific American* 269 (4): 32-41. The history of air pollution in Los Angeles and steps to improve air quality.

Leong, S. T., et al. 2002. "Influence of benzene emission from motorcycles on Bangkok air quality" *Atmospheric Environment* 36 (4): 651-661. Motorcycles and other two-stroke engines contribute a large amount of smog-producing chemicals to urban air in developing country cities.

Longstreth, J. D., et al. 1995. "Effects of Increased Solar Ultraviolet Radiation on Human Health," *Ambio* 24 (3): 153-165. Risks of eye diseases, cancer, and immune dysfunction from increased UV exposure are calculated.

Lovei, M. 1998. *Phasing Out Lead from Gasoline: worldwide experience and Policy Implications*. World Bank Technical Paper 397. Banning leaded gasoline is one of the most effective environmental regulations ever passed.

Lu, J. Y., Schroeder, W. H., Barrie, L. A. & Steffen. 2001. "Magnification of atmospheric mercury deposition to polar regions in springtime: the link to tropospheric ozone depletion chemistry." *Geophysical Research Letters* 28: 3219 – 3222. Chlorine and bromine compounds in Arctic air deplete atmospheric ozone and also trigger mercury deposition.

Madge, David, et al. 1996. "Urban air pollution in megacities of the developing world," *Atmospheric Environment* 30 (5): 681-686. Grim statistics.

Matt, G. E. et al. 2004. "Households contaminated by environmental tobacco smoke: sources of infant exposures." *Tobacco Control*, 13: 29– 7. Parents who smoke outdoors still expose homes and kids to nicotine.

May, Jeffrey C. 2001. *My House Is Killing Me! : The Home Guide for Families With Allergies and Asthma*. Johns Hopkins Univ. Press. What to do about indoor air pollution.

Mayerhoff, P., et al. 2002. "Long-term, consistent scenarios of emissions, deposition, and climate change in Europe." *Environmental Science and Policy* 5 (4): 273-305. An overview of air pollution in Europe.

Meharg, A. A. & Killham, K. 2003. "A pre-industrial source of dioxins and furans." *Nature* 421: 909 – 910. Modern industry is largely to blame for the dioxins but peat-burning fires in Scotland also released these carcinogenic chemicals.

Mims, S.A. and F.M. Mims. 2004. "Fungal spores are transported long distances in smoke from biomass fires." *Atmospheric Environment* 38 (5): 651-655. More evidence of long distance transport.

Molina, L. T., et al., 2007. [Air quality in North America's most populous city – overview of MCMA-2003 Campaign](#). *Atmos. Chem. Phys. Discuss.*, 7, 3113–3177. A long-term, multi-investigator study of air quality in Mexico City.

Molina, Mario J. and F. Sherwood Rowland. 1974. "Stratospheric sink for chlorofluoromethanes: chlorine atom catalyzed destruction of ozone." *Nature* 249: 810-812. Pioneering work that ultimately won a Nobel prize.

Nagashima, T., et al. 2002. "Future development of the ozone layer calculated by a general circulation model with fully interactive chemistry". *Geophysical Research Letters*

29: 31 – 34. Japanese researchers say that the Antarctic ozone hole might disappear by 2040.

Okuda, T., et al. 2002. "Source identification of Malaysian atmospheric polycyclic aromatic hydrocarbons nearby forest fires using molecular and isotopic compositions" *Atmospheric Environment* 36 (4): 611-618. Chemical signals can identify the source of smoke from forest fires.

Owega, S., et al. 2004. "Long-range sources of Toronto particulate matter (PM_{2.5}) identified by Aerosol Laser Ablation Mass Spectrometry (LAMS)" *Atmospheric Environment* 38 (33): 5545-5553. Dust from Africa was detected in Toronto air.

Parrish, D. D., et al. 1993. "Export of North American Ozone Pollution to the North Atlantic Ocean," *Science* 259: 1436. The amount of tropospheric ozone produced photochemically from anthropogenic precursors is calculated to be greater than that from natural sources.

Parson, Edward A. 2003. *Protecting the Ozone Layer: Science and Strategy*. Oxford University Press. The science and politics of stratospheric ozone.

Parson, Edward A. and Owen Greene. 1995. "The Complex chemistry of International Ozone Agreements," *Environment* 37 (2): 16-20. A discussion of the Montreal Protocol.

Pinker, R.T., et al. 2005. "Do Satellites Detect Trends in Surface Solar Radiation?" *Science* 308: 850-854. Satellite data show a trend toward brightening of the earth's surface everywhere except highly polluted cities.

Poikolainen, J., et al. 2004. "Atmospheric heavy metal deposition in Finland during 1985-2000 using mosses as bioindicators" *The Science of the Total Environment* 318 (1-3): pp 171-185. Long-lived mosses accumulate atmospheric pollutants and are good bioindicators.

Rabl, A and N. Eyre. 1999. "Damages and costs of air pollution: An analysis of uncertainties." *Environment International* 25 (1): 29-46. What are the effects of air pollution?

Raloff, Janet. 2003. "Why the Mercury Falls." *Science News* 163: 72-74. A good summary of how mercury gets into our environment and how we might prevent its doing so.

Ramanathan, V., et al. 2007. "Warming trends in Asia amplified by brown cloud solar absorption." *Nature* 448: 575-578. Pollution from biomass burning and fossil fuel combustion absorb sunlight and warm the atmosphere.

Ramanathan, V. et al. 2001. Indian Ocean experiment: An integrated analysis of the climate forcing and effects of the great Indo-Asian haze. *J. Geophys. Res.* 106: doi: 10.1029/2001JD900133 (2001)

Ramaprasad, J., et al. 2004. "The Washington aerial spray drift study: assessment of off-target organophosphorus insecticide atmospheric movement by plant surface volatilization." *Atmospheric Environment* 38 (33): 5703-5713. Re-evaporation of pesticides from leaf surfaces and soil may be a significant pathway of exposure for humans.

Randall, C. E., et al. 2005, "Stratospheric effects of energetic particle precipitation in 2003–2004", *Geophys. Res. Lett.*, 32, L05802, doi:10.1029/2004GL022003. Solar winds, in combination with extreme weather conditions, caused an unprecedented thinning of the Arctic ozone layer in 2004.

Ravindra, K., Wauters, E., Tyagi, S. K., Mor, S., And Grieken, R. V., 2006. [Assessment Of Air Quality After The Implementation of Compressed Natural Gas \(Cng\) As Fuel In Public Transport In Delhi, India](#). *Environmental Monitoring and Assessment* 115, 405–417. Air pollution control in Delhi has been very successful.

Rawn, Dorothea F.K., et al. 2001. "Historical contamination of Yukon Lake sediments by PCBs and organochlorine pesticides: influence of local sources and watershed characteristics" *The Science of the Total Environment* 280 (1-3): 17-37. Analysis of sediment cores from eight lakes in the Yukon and British Columbia point to long-range air transport as the source of DDT and PCBs in water and fish.

Retallack, Simon. 1997. "God Protect Us from Those Who 'Protect the Skies'," *The Ecologist* 27 (5): 188-191. The Montreal Protocol, initially hailed as a landmark in environmental protection, emerged as an agreement "as ridden with holes as the ozone layer it was designed to protect."

Rothenberg, David and Wandee J. Pryor. 2003. *Writing on Air*. MIT Press. A combination of art and science in essays, poems, photography and drawings.

Shinn, E. A. et al. 2000 "African dust and the demise of Caribbean coral reefs." *Geophysical Research Letters* 27: 3029 – 3032. Global warming may be damaging Caribbean coral reefs by causing the Sahara desert to expand.

Sliggers, J. 2004. "The need for more integrated policy for air quality, acidification and climate change: reactive nitrogen links them all." *Environmental Science and Policy* 7 (1): 47-58. Nitrogen plays an important role in acid precipitation.

Smith, Gar. 1997. "Oil Spills in the Sky," *Earth Island Journal* 12 (3): 34-35. Jetliners destroy the ozone shield and vent climate-changing contrails.

Smith, K. R. 2000. "National burden of disease in India from indoor air pollution." Proceedings of the National Academy of Sciences 97 (24): 13286-13293. A rare study of the disease burden in a developing country.

Social Learning Group. 2001. Learning to Manage Global Environmental Risks: Volume 1, A Comparative History of Social Responses to Climate Change, Ozone Depletion, and Acid Rain. MIT Press. A look at how ideas, interests, and institutions affect environmental management.

Southworth, G.R., et al. 2004. "Fugitive mercury emissions from a chlor-alkali factory: sources and fluxes to the atmosphere." Atmospheric Environment 38 (4): 597-611. Manufacture of paper-bleaching chemicals is a major source of mercury pollution.

Spengler, John D. et al (eds). 2000. Indoor Air Quality Handbook.. McGraw-Hill Co. A professional handbook with lots of useful information.

Steding, D.J., and A.R. Flegal. 2003. "Mercury concentrations in coastal California precipitation: Evidence of local and trans-Pacific fluxes of mercury to North America." Journal of Geophysical Research 107(D24):4764.

Thornton, Joe. 2000. Pandora's Poison: Chlorine, Health, and a new Environmental Strategy. MIT Press. Chlorine is used in a wide variety of industrial products but its environmental and health drawbacks are serious.

Torrens, I. M. 1990. "Developing Clean Coal Technologies," Environment 32 (6): 10-16. Coal combustion is the single largest source of air pollution in North America. Billions of dollars are being spent to find ways to reduce this pollution.

Twohy, C.H., et al. 1989. Light-absorbing material extracted from cloud droplets and its effect on cloud albedo. J. Geophys. Res. 94: 8623-8631. Soot darkens clouds and increases solar absorption.

UNEP and WHO. 1994. "Air Pollution in the World's Megacities." Environment (March 1994) 4-14, 25-37. Conditions aren't much better today in most developing areas.

Warner, Cecil F. et al. 1997. Air Pollution : Its Origin and Control. Addison-Wesley Co. An introduction to the field of air pollution for scientists and engineers.

Wenzel, Tom. 2001. "Reducing emissions from in-use vehicles: an evaluation of the Phoenix inspection and maintenance program using test results and independent emissions measurements" Environmental Science & Policy, Vol. 4 (6) (2001) pp. 359 – 376. Remote sensing suggests less benefit from this program than official data.

Wild, Martin, et al. 2005. "From Dimming to Brightening: Decadal Changes in Solar Radiation at Earth's Surface". Science 308: 847-850. Since the 1980s there has been a

transition from decreasing to increasing solar radiation nearly everywhere, except in heavily polluted areas such as India.

Wilson, Richard and John Spengler. 1996. *Particles in Our Air: Concentrations and Health Effects*. Island Press. A useful overview of the health effects of aerosols.

Wu, Pei-Chih, et al., 2004. "Increased levels of ambient fungal spores in Taiwan are associated with dust events from China" *Atmospheric Environment* 38 (29): 4879-4886. Dust storms from China deposit live fungal spores in Taiwan.

Yamaji, Kazuyo, et al. 2003. "A country-specific, high-resolution emission inventory for methane from livestock in Asia in 2000." *Atmospheric Environment* 37 (31): 4393-4406. An important issue in global warming.

Yli-Tuomi, T. et al. 2003. "Composition of the Finnish Arctic aerosol: collection and analysis of historic filter samples." *Atmospheric Environment* 37 (17): 2355-2364. Analysis of pollutant accumulation in the arctic gives us a picture of historic emissions.