The increase in allergic diseases is inter alia explained by the adjuvant effect of environmental pollutants: (1) The interaction between traffic-related airborne particles and pollen grains in the atmosphere may lead to agglomeration of particles on the surface of allergen carriers inducing their activation and to modulation of allergen release, generation of allergenic aerosols and adsorption of pollen proteins to airborne particles. (2) Anthropogenic air pollutants enhance the release of pollen-associated lipid mediators (PALMs) from pollen grains, substances with proinflammatory and immune modulating effects, which can lead to enhancement of allergic symptoms and maintenance of disease. (3) Air pollutants, such as NO(2), ozone, secondhand tobacco smoke, fine and ultrafine particles play an important role as adjuvants and trigger factors for allergic disease development as well as for elicitation and aggravation of allergic symptoms. (4) Polymorphisms in phase II drug-metabolizing enzymes can modulate susceptibility to the adjuvant effects of anthropogenic air pollutants on the IgE-mediated immune response. This highlights gene-environment interactions, which play an important role in the manifestation of allergic diseases.