



LOMBARDIA: A REGION WITH SPECIAL PROBLEMS

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The region of Lombardy, nearly 10 million inhabitants, is bordered on three sides by mountains. The wind speed and rain fall measured are among the lowest in Europe, thus contributing to high pollution levels and to thermal inversion phenomena by which pollutants are trapped to the ground. Road transport and domestic heating are among the main pollution sources. Recently, the short-term effects of PM_{10} and NO_2 and their impact on health were assessed not only in the urban area of Milan but also on the regional scale. Effect estimates on all-cause and cause-specific mortality and on selected causes of hospital admissions were obtained for the period 2003-2006 using Poisson regression models and were expressed in terms of the percentage of variation (PV) associated with an increase of $10\mu g/m^3$ in pollutant concentration at lag 0-1 for mortality and lag 0-3 for hospital admissions. For PM_{10} , PVs for the whole Lombardy population were: 0.30% all natural, 0.30% cardiovascular, 1.64% respiratory mortality; and 0.14% cardiac, 0.77% cerebrovascular, 0.54% respiratory hospital admissions. For NO_2 , PVs were: 0.70% all natural, 1.12% cardiovascular, and 0.46% respiratory mortality; and 1.14% cardiac, 1.20% cerebrovascular, 1.70% respiratory hospital admissions. The impact was expressed as attributable deaths and hospitalizations in the year 2007, under several counterfactual scenarios of air pollution reduction. The annual average PM_{10} levels exceeding the EU threshold of $40\mu g/m^3$ were responsible at regional level for 173 attributable deaths (43 cardiovascular and 56 respiratory) and 44 cardiac, 60 cerebrovascular, and 193 respiratory hospital admissions. The annual average NO_2 levels exceeding the limit of $40\mu g/m^3$ were responsible for 450 attributable deaths (239 cardiovascular and 24 respiratory) and for 471 cardiac, 286 cerebrovascular, and 471 respiratory hospital admissions. A 20% reduction in PM_{10} or NO_2 levels could reduce by at least 30% the burden of short-term attributable deaths and hospitalizations. Policies for air pollution reduction, even by limited amounts, could have immediate impact in terms of avoided deaths and hospital admissions in highly polluted areas.