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**Title:** Atopy and allergic disease in rural Poland before and after accession to the European Union

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**Body:** Background: Farming environments may protect against atopy, asthma and hay fever. Objective: In 2003 we measured a striking, age-related difference in the prevalence of atopy between village and small-town populations in south west Poland. Nine years later, we undertook a second cross-sectional survey of the same area to assess whether rapid changes in farming practices, driven by accession to the European Union in 2004, would be reflected in an increase in atopy, asthma and hay fever in these villages. Methods: In 2012 we surveyed 1730 inhabitants aged >5 years (response rate 86%). 560 villagers and 348 town inhabitants took part in both surveys. Participants completed a questionnaire on farm-related exposures and symptoms of asthma and hay fever. Atopy was assessed using skin prick tests. Results: In 2012, far fewer villagers had contact with cows (4% vs 24.3% in 2003) or pigs (14% vs 33.5%), milked cows (2.7% vs 12.7%) or drank unpasteurised milk (9% vs 35%). The prevalence of atopy increased, at all ages, between 2003 and 2012 both in the total village population (7.3% vs 19.6%,  $p<0.0001$ ) and among villagers who took part in both surveys (7.9% vs 17.8%,  $p<0.0001$ ). In the townspeople it did not change substantially (20.0% vs 19.9% and 21.7% vs 18.5%, respectively). There was no significant difference in asthma prevalence in either the villages (5.0% vs 4.3%) or town (4.3% vs 5.0%). Hay fever increased in the villages (3.0% vs 7.7%) but not in the town (7.1% vs 7.2%). Conclusions: We report a substantial increase in atopy, at all ages, in a remarkably short period of time in a Polish population whose farm-related exposures were dramatically reduced after joining the European Union.