The effect of air quality on sleep was examined for occupants of 14 identical single-occupancy dormitory rooms. The subjects, half women, were exposed to two conditions (open/closed window), each for one week, resulting in night-time average CO2 levels of 660 and 2585 ppm, and air temperatures of 24.7 and 23.9°C, respectively. Sleep was assessed from movement data recorded on wristwatch-type actigraphs and from online morning questionnaires, including the Groningen Sleep Quality scale, questions about the sleep environment, next-day well-being, SBS symptoms, and two tests of mental performance. Although no significant effects on the sleep quality scale or on next-day performance could be shown, there were significant and positive effects of a higher ventilation rate (open window) on the actigraph measured sleep latency and on the subjects' assessment of the freshness of the air, their ability to fall asleep and nasal dryness. There was a negative effect on reported lip dryness.