
The experimentally validated CFD simulations of transient turbulent air flow and gaseous pollutant transport in a personal exposure environment are studied. Here, the personal exposure condition is the pollutant gas concentration surrounding a subject which is different from personal dose condition of a breathing subject. The purpose of this paper is to examine the effect of transient breathing on ambient trace gas concentrations and uptake concentrations. The system consists of a unidirectional flow chamber and a passive, spherical pollutant gas source, e.g., CO or NO₂. Personal exposure and dose assessment are determined by means of a breathing, non-isothermal manikin positioned in the chamber centre facing different directions. The transient three-dimensional turbulent thermal flow and the mass transfer problem have been solved on a multi-processor SGI Workstation (Origin 2000) using CFX 5.3 (AEA Technology) with modified programs.

*CFD model for a BTM and the breathing waveform.*