

## How do I modify the Air Inhalation Rates?

Monday, 09 March 2009 03:12 - Last revised Wednesday, 01 July 2009

---

The input cells for air inhalation rates have been removed from versions 1.1 and greater because those parameters are not used in any calculations. Users of version 1.0a may observe that air pathway risks or cleanup standards did not change when varying the inhalation rates.

In the RBCA Tool Kit for Chemical Releases, the air inhalation pathway calculations are based on reference concentrations, as opposed to reference doses for non-carcinogens, and unit risk factors, as opposed to slope factors for carcinogens (please see the air pathway equations on page A-12 of the software manual). These are the inhalation toxicity parameters actually measured for each COC in toxicological studies and reported by EPA in IRIS, HEAST, etc. These values are independent of inhalation rates and body weight. Converting reference concentrations to reference doses or unit risk factors to slope factors requires assumptions regarding inhalation rates and body weight (typically the RME values). Thus, whenever you see an inhalation reference dose or slope factor, implicit assumptions regarding inhalation rates and body weight have already been made in order to calculate that value.

Although the calculations in the RBCA Tool Kit make no assumption with regard to inhalation rates, in essence you can account for varying assumed rates by scaling the exposure duration or exposure frequency parameters by the corresponding factors. For example, if you wanted to assume an inhalation rate of 15 m<sup>3</sup>/day, as opposed to a 20 m<sup>3</sup>/day RME value, you could scale the default exposure frequency of 350 days/yr to  $(350 \times 15 / 20) = 262.5$  days/yr to account for an equivalent reduction in inhalation exposure, based on the measured reference concentration or unit risk factor.