

Indoor Air

Indoor Air Background Subpopulations and Seasonality at the CDOT MTL Site, Denver, Colorado

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The CDOT MTL Site in Denver, Colorado has been the subject of extensive indoor air sampling for over eight years. Beginning in October 1998 24-hour SUMMA canister samples were analyzed using TO-15 SIM, with results reported down to the method detection limit (MDL). While several publications have documented background indoor air concentrations of chlorinated chemicals in residences at this site (Indoor Air 2002, MSRAS 2002, 16th Int. Conf. Soils, Sediments and Water 2000, etc.), additional results on background data seasonal variability and sub-populations are now available from the several thousand indoor air samples collected on a quarterly basis. A detailed examination of the variability of background and its relationship to residence specific factors are presented.

Benzene, chloroform, methylene chloride (DCM), tetrachloroethylene (PCE), bromodichloromethane (BrDCM) and 1,2-dichloroethane were routinely measured in all indoor air samples in addition to the groundwater-derived chemicals of interest. Several distinctive results have been found in the background indoor air data from this site. There is a very strong correlation of BrDCM, with chloroform. This suggests that, similar to chloroform, BrDCM is derived from chlorinated tap water.

There is a highly significant difference in the background indoor air concentration of benzene between single family homes with and without attached garages. Homes with attached garages have concentrations averaging two times greater (5.5 ug/m³) than those without (2.8 ug/m³). The other gasoline related hydrocarbons show similar behavior. There is a notable seasonality to background indoor concentrations of chloroform and methylene chloride. Chloroform concentrations tend to peak in summer and reach minimums in winter. DCM concentrations generally peak in summer and fall.