

Supplementary Material

Calculation of percent time UFP concentration was above threshold

We sorted all UFP sampling data points in a decreasing sequence and chose a threshold UFP concentration, C_i , as a benchmark concentration to subgroup the UFP data points. The cumulative data point, N_i , is the number of all the UFP concentrations above the C_i , threshold. We then evaluated the cumulative fraction of data points AN_i as:

$$AN_i = \frac{N_i}{N} \quad (1)$$

N is total number of UFP 5-second sampling data points for either residential neighborhoods or major streets.

The cumulative UFP count, P_i , is proportional to the sum of all the UFP concentrations above C_i .

$$P_i = \sum C_{UFP} \quad \text{for } C_{UFP} > C_i \quad (3)$$

$$P_{total} = \sum C_{UFP} \quad \text{for all UFP concentrations} \quad (4)$$

$$AP_i = \frac{P_i}{P_{total}} \quad (5)$$

Here, P_{total} is the sum of all the ultrafine particles measured in residential area or major surface streets. P_i is the sum of all the ultrafine particles for UFP concentrations above the selected threshold. AP_i is cumulative fraction of UFPs contributed from UFP concentrations above C_i threshold. $const$ is a constant number determined by the FMPS sampling flow rate times 5 seconds.