This study investigates the impact of air pollution on biochemical and physiological parameters of ten dominant plant species at two industrial sites. The research aimed to identify suitable plant species for mitigating air pollution. Air Pollution Tolerance Index (APTI), Anticipated Performance Index (API), and Pollution Load Index (PLI) were monitored in winter and summer seasons. Results revealed that APTI values were higher in winter, indicating increased tolerance, with *Murraya paniculata* and *Mangifera indica* exhibiting the highest tolerance in winter and summer, respectively. However, all plants displayed sensitivity to air pollution (APTI < 11), emphasizing the need for pollution reduction strategies. Dust content was significantly higher in winter. API grades, considering biological and socio-economic attributes, evaluated *Mangifera indica* as an excellent performer in both seasons. In contrast, *Alstonia scholaris* showed the highest Pollution Load Index (PLI) in both seasons, indicating elevated heavy metal accumulation in its leaves.The study highlights the importance of selecting plant species with high air pollution tolerance and low heavy metal accumulation for industrial sites. *Mangifera indica's* excellent performance and moderate PLI make it a suitable candidate. These findings contribute to the development of effective phytoremediation strategies for improving air quality. This research has implications for environmental management and urban planning, emphasizing the role of plant species in mitigating air pollution. Future studies can investigate the mechanisms underlying plant tolerance and heavy metal accumulation, informing the selection of optimal plant species for air pollution reduction.