Teterboro Airport Air Quality Study
General Summary
February, 2008

Background

Before ENVIRON conducted the current study, two previous studies were conducted: one was a modeling study and the other a very limited monitoring study.

In 2001, a screening-level evaluation of potential air quality impacts of the Teterboro Airport operations was conducted by ENVIRON. Based on one sampling event (conducted over a 48-hour period during June 27-29,2001), the authors concluded that the airport operations may be affecting ambient air quality in the immediate vicinity:

- Concentrations of fuel-related compounds such as benzene measured in air near Teterboro Airport were higher than annual average levels that have been reported in Camden and Elizabeth, New Jersey by the New Jersey Department of Environmental Protection (NJDEP). In contrast, concentrations of non-fuel related air toxics such as carbon tetrachloride were similar in magnitude at the three sites.
- Concentrations of a number of air toxics were elevated downwind from the airport, compared to background levels measured upwind from the airport.

Published in 2003, the modeling study was conducted by the Environmental and Occupational Health Sciences Institute (EOHSI) to estimate the impact of TEB operations on local air quality. The EOHSI study concluded that:

- The relative contribution of Teterboro airport operations to the ambient concentrations of air toxics in the modeled area is minor, due to the presence of multiple other sources.
- The Teterboro Airport contribution to ambient air toxics levels at 51 of the 53 census tracts within a 5 km radius from the airport is less than 1%. Naphthalene is an exception; however, its levels are very low.
- The contributions of airport operations to air toxics levels in the Moonachie and Teterboro census tracts are generally on the order of 1-5% (except naphthalene).

Goals of the ENVIRON Study

The general purpose of this study was to evaluate the air quality and health risks associated with operations of Teterboro Airport. This study was designed to provide data to meet the following objectives:

- Assess long-term ambient concentrations of selected pollutants (including chemicals regulated as hazardous air pollutants) in the immediate vicinity of the airport and the associated risks to human health;
- Provide monitoring results consistent with other data being collected by NJDEP, which would allow for a comparison of the Teterboro Airport results to data collected for other locations in New Jersey (including Camden, Chester, New Brunswick, and Elizabeth);
- Evaluate whether contributions from airport emissions can be discerned from the contributions of other background sources.

- Four sampling and monitoring stations were established at the airport fenceline near each end of the runways, and equipment was set up to monitor volatile organic compounds (VOCs), carbonyls, fine particulate matter ($PM_{2.5}$), black carbon (BC), other gaseous compounds (measured by open path monitors), wind speed and direction, traffic, and aircraft activity.

Results and Conclusions

The study showed that:

- Average concentrations of certain VOCs (e.g., formaldehyde, toluene) at Teterboro Airport were higher than at other NJDEP monitoring locations;
- Risks associated with the concentrations of VOCs at parts of Teterboro Airport were higher than risks at other NJDEP monitoring locations (based on conservative risk screening calculations intended to overestimate exposures and be health protective), but these risks were not necessarily associated with the airport operations;
- Similar to other locations in New Jersey, risks at Teterboro Airport exceed health benchmarks, and these exceedances are typical of urban areas in the U.S;
- $PM_{2.5}$ average concentrations at Teterboro Airport appears to be higher than at other New Jersey monitoring locations in 2006, although the method used to measure $PM_{2.5}$ at Teterboro Airport typically yields higher concentrations than the Federal Reference Method;
- High BC, $PM_{2.5}$ concentrations and signals from open path monitors were observed to come from both roadways and the airport.

It is concluded that the airport activities have measurable impacts on local air quality, although the data were insufficient to quantify these impacts. The study showed that while the airport contributes to air quality issues in the area, its impact cannot be differentiated from the preponderance of other emissions, specifically mobile sources.