

First, it seems that the report is put together more to defend and deny pollution than it is to advance the protection of the environment...the authors being of course the Illinois Environmental Protection Agency. The report concludes overall that, based on measurements, Chicago area toxic and hazardous air pollution concentrations are similar to other major, polluted cities and that O'Hare Airport emissions have an impact on the air quality in adjacent communities, but "that impact did not result in levels higher than those found in a typical urban environment."

Toxics measurements "demonstrated" that:

- \*Lemont was quite clean, even though it was downwind from major polluters such as refineries, etc.
- \*Washington school in the south Calumet region was much worse, due to nearby industrialization, than the O'Hare area. [No mention of concern for this bad pollution condition on the children of the area.]
- \*Northbrook measurements showed it also to be quite clean.
- \*Difference measurements between Bensenville and Schiller park monitors showed minimal O'Hare impact on days when the former was upwind and the latter was downwind.
- \*Toxics levels were generally comparable or lower than at other major cities.

More specifically:

The data analysis demonstrated that O'Hare Airport emissions had an impact in the areas adjacent to the airport for several key target compounds, including acetaldehyde, benzene, formaldehyde, polycyclic organics and lead. All these compounds are Urban Air Toxics and have been identified as associated with airport operations. The downwind concentration of acetaldehyde was found to be 45.6% higher than upwind, formaldehyde was 32.8% higher, benzene was 34.1% higher, polycyclics (PAHs) were 65.9% higher and lead was 87.5% higher. An impact from airport operations was not unexpected as airport operations, including aircraft takeoffs, landings, taxiing, refueling and use of support equipment, result in significant emissions of volatile organics and target air toxic compounds. The resulting airport emissions should have had, as the monitoring data shows, some impact in the areas adjacent to the airport. While the downwind concentrations were found to be higher, the results showed that the levels found at O'Hare Airport are still in the "typical urban range" and comparable to or lower than levels found in other large urban areas.

Monitoring Issues

The main monitoring site used by the IEPA to determine O'Hare toxics levels is the Schiller Park location which, in my opinion, is a very poor location choice. Most significantly, it is located too far south to get a good gauge on airport emissions under wind directions of anything except between about WSW to NNW. This means that of the report's 16 total measuring days, distributed every 12 days from June through December of year 2000, only 6 were primarily downwind (in WSW-NNW winds; 1-June, 1-September, 2-November, 2-December). Also poor is the fact that the site is sandwiched between two sources of auto/truck emissions, Mannheim road to the immediate west and the Tri-state tollway to the east, both within a few hundred feet (airport emissions sources are at least 10X this distance). This makes it difficult to separate vehicular emissions from airport emission.

The Schiller Park site is relatively low to the ground (<20 feet) as compared to all other sites (typically at least two stories up), increasing its vehicular emissions exposure and probably decreasing its airport exposure. One would surmise that aircraft emissions, being very hot, would tend to immediately rise up, aided in the summer by rising thermals from the expanses of heated asphalt. Thus, in light winds, the emissions would have an initial "up and over" trajectory of any low placed monitor probe.

[Though this was also true for the Environ study measurements, those measurements were meant to be preliminary in nature (several 8-hour samples) and the study pointed out that there was a need for vertical measurements. Also, the monitoring sites were located west of Mannheim, with measurements limited to "downwind" days, minimizing any vehicular traffic effects.]

The Northbrook site is too far north and acts more like a northern pollution boundary reference monitor. The Bensenville monitor, southwest of the airport, can act as an airport pollutant detector but only under northeast wind conditions, which occurred much less frequently during the June-December period.

What is needed is to have more and better placed monitors, such as an additional one on the north-east airport fence line, relocating the Schiller monitor to the top (west side) of the tall office building just across Lawrence avenue, a monitor in Park Ridge and one in Lincolnwood. This would place 3 monitors in line from the airport fence line to Park Ridge to Lincolnwood (through the high cancer incidence area) and one high up to minimize the vehicular emissions influence.

Indeed, many Illinois pollution emissions sources (e.g. industrial manufacturing) have their own dedicated monitoring systems, as a condition for Illinois to grant the source a permit to operate with such emissions. Considering that O'Hare Airport is a major source of emissions, it should have its own dedicated set of robust, continuous monitors, including "upwind" control monitors. The placement of these monitors should be based on comprehensive pollutant dispersion modeling that considers both ground based and in-flight aircraft emissions sources, as well as the meteorology of the area (especially between the airport and the lake).

Finally, on the monitor siting issue, one would hope that sufficient testing has been done to verify that locating monitors on top of hot, tarred building roofs does not adversely affect the accuracy of measurements. These types of location seemed to be the norm for 4 of the 5 locations (all except Schiller Park and there is a concern that some VOC measurements, for instance, could be desensitized by roof material emissions).

#### Averaging

"Average" is a word that maybe shouldn't have been invented. Here again in this report, averaging tends to cloud conclusions, in my opinion. For example, even though the 16 (max.) measured days of information for any toxic could have been charted showing both the averages and the min/max ranges, only the average is shown. Though this simplifies media coverage, it purposely minimizes the scientific need to examine and attempt to explain these min/max ranges.

For instance, though winds were monitored and meteorological conditions were noted, there was no apparent attempt to correlate them to specific measurement results, which might show that the substantial variations were a direct function of wind speed, in addition to direction.

The daily measurements are already averages (over 24 hours) in most cases, being based on continuous sample collection through the day. This means that the airport's 10 p.m. to 6 a.m. low-emission period is averaged in to the entire measurement, reducing the net value to around 2/3 of the (average) level of the important 6 a.m. to 10 p.m. period of maximal airport emissions (and also vehicular emissions). Thus, to compare to Environ's 8-hour measurements, the IEPA numbers should probably all be multiplied by a factor of 1.5.

#### General

The IEPA study made no attempt to model airport emission dispersions, beyond considering wind rose patterns. There was no attempt to identify types and quantities of airport source emissions (especially aircraft) in order to incorporate into an overall dispersion model as well as to attempt to "tag" specific pollutants to the source in order to aid differentiation from other sources at monitoring sites e.g. Schiller Park. Though this was not in the scope of this 6-month toxic monitoring program, it makes it even more difficult to compare results to the original "triggering" Environ study.

There was no attempt in the program to place portable monitoring sites in key communities e.g. Lincolnwood. And there was little post-analysis of results implications other than impact minimization.

The resulting airport emissions should have had, as the monitoring data shows, some impact in the areas adjacent to the airport. While the downwind concentrations were found to be higher, the results showed that the "levels found at O'Hare Airport are still in the "typical urban range" and comparable to or lower than levels found in other large urban areas." This conclusion leaves one quite uncomfortable, considering that most of the "typical" urban pollution concentrations are known to be unacceptable (the *raison de' etre* for the EPA). Thus, it is of little comfort to know that our atmosphere is just as bad as other major cities. Furthermore, the study does not cite the specific locations used in this comparison, leaving the probability that those sites are also influenced by airport emissions and thus creating a situation of justifying one airport's pollution impact on the basis of being no worse than that from other airports!

Finally, one is left with the distinct feeling that there is less than coincidence to the timing of the release of this "O'Hare emissions are of minimal significance to your health" report, considering (a) it is (a long) 18 months after the last measurement was taken, (b) the IDPH recently also released their "What cancer...we find no out of ordinary incidence rates" and (b) the U.S. Congress is being lobbied very heavily to enact law that removes all Illinois EPA, DPH and legislative authority over such matters.

Overall, the report has value but is an inadequate addressing of the major issues. Part of the inadequacy derives from the short term of the study, which was limited by lack of sufficient funding. It is unfortunate that even that funding (\$200K) had to come from Park Ridge rather than the state, in order to get some attention to the issues.

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