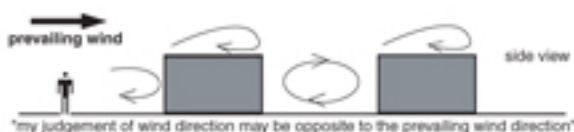


"Rules of Thumb" For Air Toxics Releases in Urban Environments

APPARENT WIND ANOMALIES

The locally-measured wind may not match the large-scale wind due to building-induced circulations.

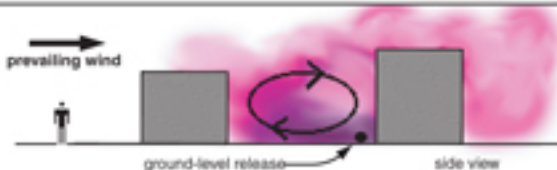
Lesson: because of the complicated flows that develop around buildings, a measurement of wind made at ground-level may not be indicative of the upper-level prevailing wind. Evacuation zones far downwind must be determined by the larger-scale plume transport which follows the prevailing wind, not the local wind.



AGENT TRAPPING IN VORTICES

For winds nearly face-on to the building wall, concentrations of hazardous material can build-up in between buildings and take a relatively long time to flush out.

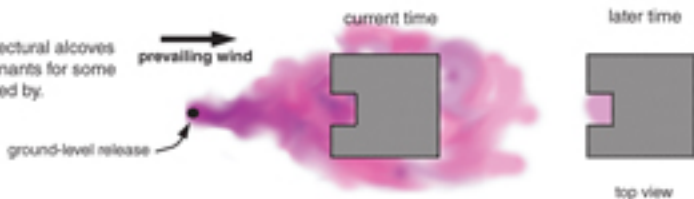
Lesson: air contaminants can become trapped between buildings in slow moving vortices, thus taking longer to flush out with clean air. In most cases, wider buildings and narrower streets will trap the pollutant longer.



AGENT ENTRAPMENT

Recessed entryways or architectural alcoves may trap and hold air contaminants for some time after the plume has passed by.

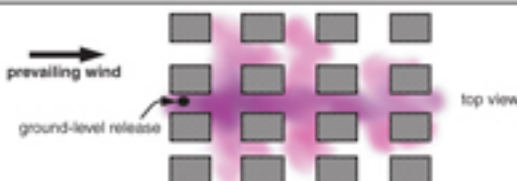
Lesson: even after clearly determining that the main portion of the plume has disappeared, be aware that some of the air contaminant may have collected in alcoves and other zones of stagnation.



ON-AXIS CHANNELING EFFECTS

For winds parallel to the street, the plume can become contained within the street canyon; however, the plume can travel up side streets.

Lesson: after determining that the prevailing wind direction is parallel to the street containing the release, be aware that contaminated air is likely to travel several blocks in each direction along side streets.



OFF-AXIS CHANNELING EFFECTS

The plume can get channeled by streets near the source and end-up traveling off the prevailing wind direction axis.

Lesson: for determining larger-scale evacuation zones, be aware that the plume initially may be transported in a direction off-angle from the prevailing wind. Once the plume gets dispersed above the buildings, it will then travel with the prevailing wind, but the plume's center axis will be offset from the release point.

