

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

EDDY TRANSPORT OF AGENT

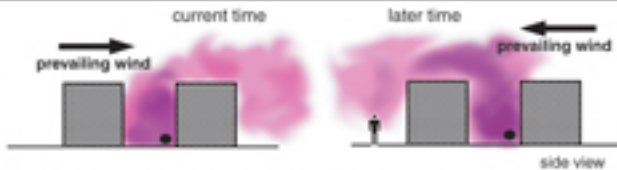
The air contaminant can move short distances against the prevailing wind direction in recirculation zones along the sides and top of the building.



Lesson: even if the source is determined to be downwind of you, be careful at locations near the building upstream of the source, as the plume can travel short distances in the opposite direction to the prevailing wind.

LARGE-SCALE WIND VARIABILITY

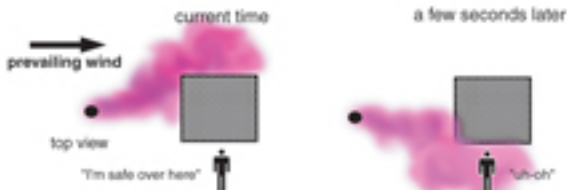
The prevailing wind switches direction occasionally, so that the upwind safe zone may now be downwind.



Lesson: the prevailing wind is not fixed and under some circumstances can change direction quickly; thus, monitor the prevailing wind direction so that safe zones can be maintained.

SMALL-SCALE WIND VARIABILITY

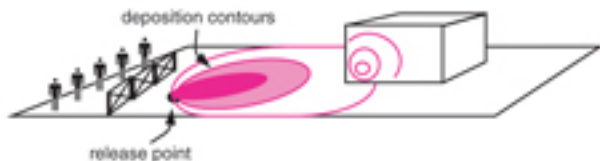
The local wind can switch direction very rapidly, so that the plume may switch from one side of the building to the other in a matter of seconds.



Lesson: due to the turbulent nature of the wind, it is very common for a plume to bounce from one side of the building to the other; hence, don't assume that you are safe on one side of the building just because the plume is currently on the other side.

AGENT DEPOSITION

After the plume has left the area of release, the ground and building surfaces may still be contaminated due to deposition of the toxic agent.



Lesson: because the contaminant may stick to surfaces, touching surfaces in the vicinity of the release point is not recommended until decontamination is complete.

INDOOR EFFECTS

When the plume is passing over, it is probably safer to remain indoors. After the plume has passed by, it may be safer to move outdoors.



Lesson: for an outdoor release, modeling studies show that concentrations can initially be lower indoors, but then later the concentrations become lower outside. These relationships, however, depend upon the details of the building ventilation.