



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

The Southwest Indianapolis Air Toxics Study

Odor and Air Toxics

www.idem.IN.gov

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Introduction:

Many chemicals used today have the potential to be smelled by humans. The human nose has an amazing ability to detect odors that, in many cases, still cannot be matched by scientific equipment. Because the nose is so good at its job, it is important to realize that just because an odor is present does not mean that a danger exists. For example, most people can smell acetone, a common industrial and household chemical, at concentrations well below one (1) part per million (ppm), however acetone concentrations would need to be more than ten (10) times above that constantly for many years before adverse health effects would be expected. On the other hand, just because you cannot smell a pollutant does not mean that it is not present, or that it does not pose a risk.

Description:

Some pollutants have odor thresholds well above concentrations that have the potential for adverse health effects. In some cases, the smell of a mixture of pollutants, such as those being emitted from an industrial facility, can be very different from how each chemical would smell independently. Two (2) pollutants could work together to smell worse than either pollutant by itself, they could cancel each other out completely, or anywhere in-between. These interactions make tracking down odors difficult at best.

That is why the Indiana Department of Environmental Management (IDEM) conducts studies like the Southwest Indianapolis Air Toxics Study and performs ambient air monitoring at sites around the state. These activities allow IDEM to evaluate Indiana's air quality without relying on subjective criteria like smell.

The table below lists common pollutants, along with their odor thresholds and health protective levels. If the odor threshold is lower than the health protective level, that means you can smell the pollutant before it is a health concern.

Odor Thresholds and Health Protective Concentrations of Common Pollutants

Name	Odor Threshold (ppm)	Health Protective Level (ppm)	Odor
Acetone	< 1	13	sweet, fruity
Ammonia	< 1	0.14	sharp, pungent
Pyridine*	0.0037	0.037	disagreeable, unpleasant
Benzene	> 1	0.0094	aromatic, sweet
Toluene	> 1	1.3	sour, burnt
Methyl Mercaptan	0.0011	**	decayed cabbage

Grey shading indicates that pollutant can be smelled at concentrations below its health protective level.

* Pyridine is one of the most likely odor causing pollutants in the Southwest Indianapolis Air Toxics Study (SIATS) study area. The table shows that its odor threshold is well below its health protective level.

** No health protective level was available for methyl mercaptan.

More Information:

- For more information on the Southwest Indianapolis Air Toxics Study, please visit the study's Web site at <http://www.idem.IN.gov/programs/air/workgroups/swindyairtox>.
- For questions and concerns, please call IDEM's Office of Air Quality Project Management Section at (317) 234-3499.