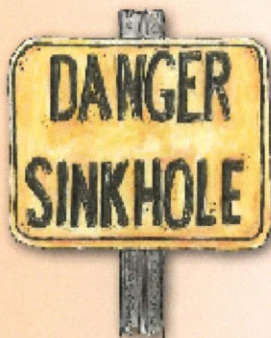


Sinkhole Warning Signs

- Fresh exposure on fence posts, foundations and trees that result when the ground sinks.
- Slumping, sagging or slanting fence posts, trees or other objects; doors and windows that fail to close properly
- Ponding of rainfall where water has never collected before
- Wilting of small, circular areas of vegetation due to the loss of moisture as it drains directly into a sinkhole
- Turbidity in water in nearby wells during early stages of sinkhole development
- Structural cracks in walls, floors and pavement; cracks in the ground surface



Flooding Issues Associated with Sinkholes

- In areas where Stormwater runoff is directed into the sinkhole, if the runoff exceeds capacity or rate of discharge of the sinkhole, flooding occurs.
- As debris carried in surface-water flow consolidates, sinkholes can become clogged, creating new wetlands, ponds, and lakes.

For More Information:

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SINK HOLES



**Facts and Environmental
Issues Associated with
Sinkholes**

SOMERSET, KY

What is a sinkhole?

Natural made Sinkholes

Sinkholes are natural depressions or holes in the land surface that occur in areas where the rock below the land surface is limestone, carbonate rock or salt beds. They are formed when the land surface gets naturally dissolved by groundwater. They can be shallow or deep, small or large, but all are a result of the dissolving of the underlying rock.

Man-Made Sinkholes

- These are sinkholes that can form when natural water-drainage patterns are changed and new water-diversion systems are developed.

- Some sinkholes form when the land and surface is changed, as is the case when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing a sinkhole.

- Groundwater pumping for urban water supply and for irrigation can produce new sinkholes in sinkhole-prone areas. Pumping can result in a lowering of ground-water levels, which can cause underground structural failure, and eventually sinkholes (USGS).



Threat to Water and Environmental Resources

- Pollutants on the ground are carried quickly with runoff to the nearest stormwater drainage well or sinkhole.
- Sinkholes used as storm drains can threaten water supplies if unfiltered or contaminated water drains from streams, lakes or wetlands into sinkholes directly connected to the aquifer.

How to Protect Ground From Surface Water Drainage Contamination

- Provide treatment to surface water prior to its entry into sinkholes.
- The existing sinkhole storage areas should be protected during construction and should not be filled or allow sediment to deposit therein.
- Site drainage patterns should not be altered substantially to increase or decrease the existing area contributing to a sinkhole. Utilize minimal disturbance in Karst areas.
- Vegetated buffer strips should be maintained or restored around a sinkhole's perimeter.
- Care should be taken to avoid open flow discharges of stormwater over silt soils due to high potential for erosion.

Forming of Sinkholes

