**PAESTA Podcast Series -- You Asked, We Answered!**

**Episode 36 -- How do sinkholes form?**

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Hello, my name is Chrissy and I am a Junior at Penn State Brandywine. I am here today to answer the following question: How do sinkholes form? Many people know what a sinkhole looks like, but not many people know how it actually forms. Sinkholes occur in many places, such as, Canada, the United States, and Europe. It is based on the land and what is underneath. Sinkholes can come in many shapes and sizes and there are actually different types. Some sinkholes get so big that they can swallow up a house or car. Sinkholes occur overtime rather than abruptly. In this podcast I am going to discuss many different characteristics of what a sinkhole is, what shapes and sizes a sinkhole can be, the different types of sinkholes, prone sinkhole areas, and mainly, how a sinkhole is formed.

There are a lot of different descriptions about how a sinkhole is characterized. I can start by saying a sinkhole can be summarized as an area where there isn’t any exterior drainage and if it rains, the rainfall travels under the earth’s surface. [1] A sinkhole can also be described as a bowl-shaped hole that constructs while the surface under the land sinks and then the surroundings pour out. [2] Some have different shapes. If you think about a sinkhole, it almost looks like a cereal bowl, but some are actually bowl shaped and some have walls that are upright and can make a personal waterhole. Sinkholes can vary in sizes too. Some can be over 100 feet deep and wide. [1]

Next, there are actually different types of sinkholes that include dissolution, cover- subsidence, and cover- collapse sinkholes. A dissolution sink hole is when the water from rain and the water from the exterior meet in between limestone, and then the soft carbonated rock moves towards the exterior and a little hole starts to appear. Cover- subsidence sinkholes occur over time, are tiny, and rare. [1] Also, with cover- subsidence sinkholes sand smothers the rock foundation and the sand flows into the rocks, resulting the ground to drop. [3] Cover- collapse sinkholes happen in clay because soil and clay are like best friends, but once the soil goes under, this process cannot be seen, and the land then falls. [2] Cover- collapse sinkholes are the most dangerous out of the three types because clay covers the rock foundation and eventually when the liquid starts to disappear, the clay and foundation start to disintegrate causing the land to unexpectedly cave-in. [3]

Furthermore, there are many sinkhole prone areas, such as karst areas. Karst can be described as areas with rocks similar to limestone that has become soft. Just about the Eastern part of the United States is considered vulnerable. Specifically Florida because Florida is mainly karst. [2] From what I heard and have read, Florida is known for having a lot of sinkholes and Florida residents are used to them. A sinkhole occurred in Florida that was about 21 meters wide and it swallowed up a swimming pool and multiple houses. There are many reasons why Florida has sinkholes. One of the reasons is because their limestone is really old. So old that it is causing the ground to collapse. The limestone did not have a chance to be flattened by pressure, which leads to erosion. [4] Sinkholes can form just about anywhere. A major sinkhole happened in Ottawa. Many buildings and shopping centers near the sinkhole had to be evacuated because gas lines and water lines exploded and were damaged. The reason this sinkhole happened is because Ottawa was established on land called Leda. This clay can be defined as “quick clay” and it is mainly known for being weak and unsafe. This sinkhole caused major damage causing peoples utilities to be shut off. [5]

Lastly, a sinkhole is formed in a karst area where the rock, specifically limestone, has a chance of being disintegrated by liquid. [6] When the rock starts to disintegrate, space can form underneath the surface. When the space underneath the surface becomes large, the ground eventually collapses and that is when a sinkhole is formed. [1]

Overall, sinkholes can be considered unpredicted and dangerous but only happen in some areas. I would not worry too much about them since a majority of them are considered uncommon. Having knowledge about sinkholes can be beneficial for a lot of people just in case a sinkhole starts to form or if someone is simply just interested in sinkholes. Before this podcast, I always wondered how sinkholes form and now I finally know. Anyway, sinkholes are unpredictable and it is hard to figure out when a sinkhole could actually happen since we tend not to know what is happening below our feet. I mean, is anyone ever aware of what happens below their feet? Probably not, but always take precaution wherever you go and always be aware of your surroundings. Especially when it rains because water plays a huge part in the formation of sinkholes. From what I discussed in this podcast, I hope you learned a lot about sinkholes and enjoyed listening to this podcast. Thank you.

*(This audio file was recorded by Nicolette Napoleon on November 9, 2016)*

**Works Cited**

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