

# The Effect Of Baking Soda On Earthworm Burrowing Time

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## Abstract

As we enter February, the earthworm season, we need to learn about these underrated animals. Without these animals there would be more pollution, less food, and more flooding. We were wondering about the effects of baking soda on burrowing time. First, we put the worm in baking soda for one minute then timed its burrow time. We did the same thing but instead of baking soda we used water. We noticed that the worm burrowed much faster than with just water

## Introduction

Will Baking soda or Toothpaste cause earthworms to burrow faster? Humans used to use baking soda to clean their teeth and they now use real toothpaste. (*Baking Soda as Toothpaste and for Whitening: Pros, Cons, How-To*, 2020) It is important to study this to show that baking soda is not what you should use to clean your teeth.

Baking Soda is considered nontoxic to humans, but if overused, it can be harmful. You should never openly consume baking soda, as it can be very harmful (*Baking Soda Overdose*, 2021). Toothpaste isn't harmful to humans, as long as it is not consumed, as you can have small amounts, the fluoride can harm humans (*Is Ingesting Toothpaste Harmful?*, 2020). Earthworms are being studied because it's not only earthworm month, but we don't have a huge supply of humans, like we do earthworms. Humans and worms have similar nervous systems, with their spinal cords, and worms' ventral nerve cord (Lal, 2018). Although this is a similarite, the earthworm's ventral cord regenerates itself, unlike the human spinal cord (Lal, 2018).

One way to get the ingredients in the soil is to insert it in there and cover it with soil. We should care about the environment because without it there would be more pollution, less food, and more flooding. (*Earthworm Activity Increases Soil Health* | *NRCS Kansas*, n.d.) It could possibly slow the worms' burrowing time and if that happens the worms could die resulting in the environment losing a key composter and plant. (Lal, 2018)

## Methods

First, we will soak a piece of paper towel with water. Then, we will put one of the worms in the paper towel for one minute. After that we put them in a cup of dirt and time how long it takes for them to burrow. After that we will repeat it with the other 3 worms. Lastly we will repeat steps one through 4 with Roundy's baking soda. We graphed the results then turned it into a graph.

## Results

The results showed that worms burrowed much faster when soaked in the baking soda. When wet with water the worms took their time to burrow in the baking soda. The independent variable was the baking soda and the water. The dependent variable was the burrowing time for the worms. The controlled variables were the worms we used and the dirt cup they burrowed in. We used a t-test which proved that baking soda is not significant and is not toxic for the worms.

## Conclusion

Our hypothesis said that baking soda would cause the faster burrowing time, and it was correct as the worms burrowed the fastest with baking soda on them. The baking soda worked fastest in every trial, except the last one. Some limitations were the lack of substances that we had and the amount of time to test. We researched that baking soda is a base, and it shows that bases will cause the fastest burrowing time. We researched whether baking soda was acidic or a base, and that helped us while testing, which we then used to our advantage when we tested them. Earthworms are related to humans in the spinal cord, and the nervous system, showing the importance of studying and testing them. I think we should test an acidic substance next, to see how the worm reacts.



## References

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Burrowing Time for Baking Soda and Water

