



# DIY Air Force Activities: Invisible Ink



## Materials:

- white paper
- cotton swab
- ¼ cup baking soda
- ¼ cup water
- empty water bottle
- 1 cup grape juice concentrate
- paintbrush or sponge



Have you ever wanted to leave a secret message? Using the power of chemistry you can! Following the instructions below you will learn how to mix your own invisible ink and then expose the message when the time is right!

## Directions:

1. Mix the baking soda and the water in the water bottle. Shake it up to dissolve the powder.
2. Take a cotton swab and dip it in the baking soda and water mixture
3. Write a secret message on your paper and then let it dry.
4. Dip your paint brush or sponge in the grape juice concentrate and paint a thin layer on your paper. Watch your message appear!

The secret message is exposed via a chemical reaction! The baking soda reacts with the acidity in the grape juice. This is why it turns a different color! For information on pH and acidity check out our pH Indicator DIY activity!

## Air Force Associations:

Cryptology is the study of secret codes. During World War II, being able to read encoded messages sent by enemy military agents saved lives and shortened the war considerably. American cryptologists developed code that proved to be unbreakable using superior code machines called “SIGABAs.” This piece of equipment, along with its German counterpart “Enigma” are on display at the National Museum of the United States Air Force in Dayton, Ohio.



# DIY Air Force Activities:

## Invisible Ink Part II

### Materials:

- ¼ cup milk
- cotton swab
- white index cards
- heat source: either an electric stovetop and tongs or an ironing board and iron

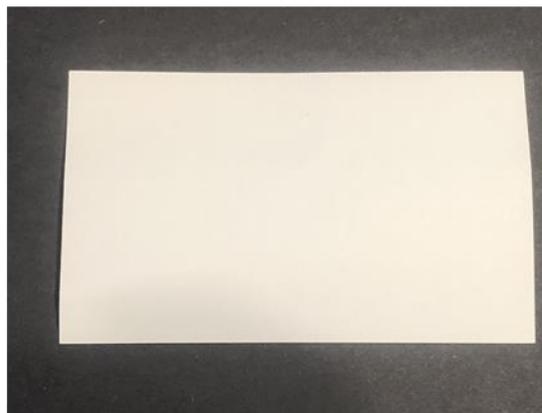


**This activity requires adult supervision. It involves a hot iron or stovetop and care should be taken not to get burned.**

### Directions:

1. Dip the cotton swab in the milk and write a secret message on your index card.
2. Allow your paper to dry completely.
3. Have an adult hold the paper with the tongs over the electric stove heating element (paper should remain at least ½ inch above the heat source. Do not let the paper touch it and be careful not to set it on fire. Have water handy just in case!). Watch your message magically appear!! Alternatively, a hot dry iron can be used to reveal the message.

**Before:**



**After:**

