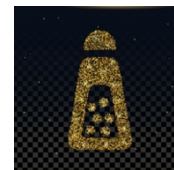


LIGHTLAB EXTRA 12: POWER OF SALT



PURPOSE: Expand on Lightlab Chapter 12 by studying its main topics in depth.

BACKGROUND: In Lightlab Chapter 12, we learned about the benefits of Salt for our health, and its valuable ability to preserve edible goods. We also learned about salt's unique chemical composition and how it dissolves in water quickly to conduct electricity. Salt's value is also evident in the Bible, and was a symbol of friendship and everlasting love.

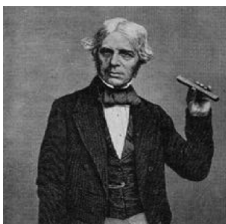


If you completed Lightlab chapter 12, fill in the blanks below:

- The uses of salt in Industry: _____, _____, and _____
- The Salt compound consists of:
Symbol ____ Name _____ and Symbol ____ Name _____
- Which part of salt matters when it comes to health? _____
- Which 2 gases are formed near each paper clip in the circuit? _____ and _____

e. The verse reference, followed by the symbolism of Salt:	

The chemical experiment that made the light go on after adding salt to the water, is also called _____. This was investigated by none other than _____ (1791-1867), the inventor of the electric dynamo!



*“The book of nature, which we have to read,
is written by the finger of God.”*

“I shall be with Christ and that is enough”

FURTHER INVESTIGATION: Let us expand on the claims and experiments of Lightlab chapter 12, by studying a health journal and attempting more experiments with electrolysis, getting to know Michael Faraday’s role in this field.

1) **STUDY “Salt and Your Health”:** Access the article “Salt and your health (Reference 2). We will read the article and answer the questions from the following sections:

1) A Taste of Physiology:

- How much sodium does the average adult body hold? In grams _____, in ounces _____
- What important element does sodium always bring along with it? _____
- What is the daily sodium intake of some isolated population groups? _____ mg
- What would happen if someone doesn’t have enough sodium?

• How do your blood vessels and brain regulate the amount of Sodium in your body:

- a. _____
- b. _____

2) Other Benefits - Impressive Evidence:

- What do scientists think are the effects of salt on blood volume? _____
- What health conditions are linked to High Sodium intake?

3) Epidemiologic Evidence:

- To research the connection between Sodium intake and blood pressure, scientists had to also evaluated the subjects for three conditions: _____

- What did INTERSALT show was an important element in these studies?

4) This means you:

- What is a healthy blood pressure measure of a lean 20 year old? ____ / ____
- Current guidelines recommend a maximum daily Sodium consumption of _____ mg
- How much sodium do you consume a day?
- Spend a week reading labels and recording. Use the table at the end of this tutorial.

5) DASHing doubts

- **What does DASH stand for?** _____

- **List the foods that the three diets researched consist of:**
 - a. Typical American (Control) _____
 - b. A test Diet _____
 - c. A combination Diet _____
- **Answer if True or False:**
 - a. The combination Diet is also called the DASH diet. _____
 - b. The DASH diet raised blood pressure most _____
 - c. During the three diets, the number of calories and sodium consumed were the same _____
- Scientists had to conduct a second DASH study comparing the _____ and _____ diets, while monitoring the intake of _____ and _____ levels of _____
- Which of these 2 diets produced a lower blood pressure results? _____ !

6) DASHing Hypertension

This section lists the results of the test described in the previous paragraph. Among the five diets and sodium level, **which test resulted with the**

Highest drop of Systolic pressure _____ Hg

Highest drop of Diastolic pressure _____ Hg

This corresponds to Diet: _____ (_____ mg of Sodium/day)

II) MORE EXPERIMENTS ON ELECTROLYSIS

Below are additional resources to experiment with the conductivity of salt and electrolysis:

- Test the ability of salty water to power an electric buzzer. (Reference 3)
- Repeat the experiment with different solvents such as sugar, baking soda, ammonia, vinegar. (Reference 4)
- Inquire Miriam Shera's Winning Science Fair report "Pickle Power", where she tests how different brands of pickles provide power to an LED. Contact us at lightlabetc@gmail.com to receive a copy.

ADVANCED: HIGH SCHOOL LEVEL

Learn more about Michael Faraday's laws on electrolysis from Reference 5.

REFERENCES:

1. **Lightlab Chapter 12**
2. Part I: The sodium connection“ Harvard Medical groups
http://www.health.harvard.edu/newsletter_article/salt-and-your-health
3. http://www.waterfiltersfast.com/Understanding-Water-Conductivity-for-Kids_b_20.html
4. “Conducting Solutions” Scienfun.com
5. <https://science.nasa.gov/electrolysis-salt-water>

Image Credit: Bright Salt shaker: Dreamstime

