Inflate a Balloon with Dry Ice

Sections

Joey Scouts | Cub Scouts | **Scouts** | **Venturer Scouts** | **Rover Scouts**

Scouts VICTORIA

Last updated: July 11, 2023, 4:30 a.m.

Challenge Areas

COMMUNITY | CREATIVE | OUTDOOR | **PERSONAL GROWTH**

Scout Method Elements

COMMUNITY INVOLVEMENT | **LEARNING BY DOING** | NATURE AND THE OUTDOORS | PROMISE AND LAW | PERSONAL PROGRESSION | PATROL SYSTEM

SYMBOLIC FRAMEWORK | **YOUTH LEADING, ADULTS SUPPORTING**

SPICES Growth Areas

CHARACTER | EMOTIONAL | **INTELLECTUAL** | PHYSICAL | SOCIAL | SPIRITUAL

The Adventure

See how different states of matter take up different amounts of space by inflating a balloon using dry ice.

Plan

1. Investigate dry ice - what is it and what is it made out of, what can it be used for, what state of matter is it in, etc?
2. Investigate states of matter and changes of states of matter - what are they called and what is happening?
3. Read the safety information and discuss with your leaders or another appropriate adult what safety equipment, precautions, and supervision may be required. Ensure that you have these safety measures in place before starting the 'Do' section.
4. Gather all the equipment that you need for your dry ice experiments. You will need the following: dry ice (ideally in the form of pellets - a few pellets per experiment should be fine), a temperature-proof container with a narrow mouth, a balloon or gloves to inflate, non-metal tweezers or spoon, and PPE.

Do

1. Carefully place about 5 pellets of dry ice into the container.
2. Quickly attach the balloon or glove to the top of the container. It may also help to tape this down.
3. Watch as the balloon or glove inflates.
4. If the balloon/glove explodes, make sure to pick up any debris.

Review

1. Did the dry ice react as you expected it to? Why or why not?
2. What do you think you could do differently to improve this experiment?
3. What did you enjoy most about this experiment? What did you learn?
4. How do you think the experiment may differ if you changed some of the variables such as a different sized container, more or less dry ice, etc?

Safety

- Dry ice is very cold. Ensure you are wearing insulated gloves while handling.
- Avoid intentional excess inhalation when experimenting as there will be higher levels of carbon dioxide present.
- Dry ice sublimates into gaseous carbon dioxide which can be hazardous to your health and lead to asphyxiation. As such, dry ice should never be stored in an enclosed environment including when transporting. Ensure that dry ice is either transported outside of the vehicle hub or windows of the vehicle hub are down. Ensure boxes are opened regularly on longer trips or storage to prevent excess pressure build up.
- Ensure you have consulted the MSDS for dry ice to familarise yourself with all risks present with dry ice.
- Ensure that individuals participating do not react to latex. Find substitute materials such as nitrile gloves if individuals have a latex allergy.

Variations

- Depending on the Challenge and Special Interest Area, the discussion around this experiment can change. For instance, an Environment Special Interest Area may look more at what carbon dioxide is, how it effects our environment, and what we can do to minimise our production of it.
- This Challenge Card pairs well with other dry ice based Challenge Cards such as Dry Ice in a Film Canister and Inflate a Balloon with Dry Ice.
- This Challenge Card can work well as a demonstration for younger sections.