Dry Ice in Film Canisters

Sections

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

Scouts VICTORIA

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Challenge Areas

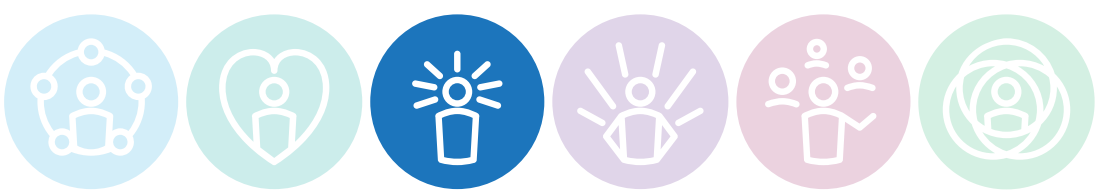
COMMUNITY | **CREATIVE** | OUTDOOR | **PERSONAL GROWTH**

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

Investigate the effects of pressure and sublimation by experimenting with dry ice in an enclosed container.

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 film canister with a lid or other similar small plastic container, temperature-proof gloves, non-metal tweezers or spoon, and PPE.

Do

1. Ensure that you set up your experiment in a suitable location away from people and breakable objects. It is advisable to create an exclusion zone around the launch area.
2. Place the film canister in the launch area.
3. Using a non-metal instrument, carefully transfer 1 or 2 pellets into the film canister and tightly place the lid onto the canister.
4. Ensure that everyone is out of the launch area.
5. Wait as the dry ice sublimates and pressure builds in the canister.
6. Watch the film canister lid fly.
7. Ensure that you pick up and return the film canister and the lid so as to not litter.

Review

1. Did the dry ice react as you expected it to? Why or why not?
2. Do you think that more dry ice was produced to create the increase in pressure? If not, what do you think caused the increase?
3. What do you think you could do differently to improve this experiment?
4. What did you enjoy most about this experiment? What did you learn?
5. 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.
- Ensure that the launch area is a suitable size to avoid being hit by flying objects.
- Ensure that you are wearing safety glasses and are outside of the launch area.
- 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.

Variations

- A creative flare can be added to this experiment by turning the film canisters into rockets and decorating them.
- See who can launch their film canister the highest.
- This Challenge Card pairs well with other dry ice based Challenge Cards such as Dry Ice Fog and Inflate a Balloon with Dry Ice.
- This Challenge Card can work well as a demonstration for younger sections.