

Matter- Chemical and Physical Changes

Essential Question- How does matter respond to the things around it?

Description- Students will learn the difference between a chemical and a physical change. They will be able to identify chemical and physical changes that occur every day. Students will then get to mix different substances and determine if a chemical or physical change has occurred.

Standards:

- **5-PS1-1** Develop a model to describe that matter is made of particles too small to be seen.
- **5-PS1-4** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Materials supplied by classroom teacher:

- One instant ice cold pack (like those found in first aid kits)
- Table salt (about 1 cup)
- Pitcher of water
- Disposable cups (4 per student if they have to work individually, if you allow partner work, 4 cups per partner group)- if you can get extra cups, that will help to have supplies already split up for the students
- Plastic Spoons (4 per student or 4 per partner group)
- Baking soda (about a table spoon per student or partner group)
- Vinegar (one bottle)
- Milk (2-3 cartons of school lunch milk will work)
- Road salt (about 1 cup)- check with custodian/maintenance dept to see if they have some
- Paper (colored construction paper or just regular paper) – one per student
- Black construction paper (half a sheet per student)

Materials supplied by Greenbush:

****If you are having trouble getting some or enough material, please contact me and I will be happy to adjust the lesson or try and get supplies to your school.**

Advanced Preparation:

- Cut apart experiment instruction cards (one set for each student or partner group)
- Copy lab report for each student
- Either set up a station for students to come get materials from you, or have materials on the desks for each student or partner group.

Program Connection Information

Please use an external microphone (conference style) rather than the integrated one in the computer for the audio for your class and locate it centrally in the room. It can be difficult for the Greenbush teacher to hear the students using the computer microphone and therefore it reduces the interactive nature of the lesson. It is fine to use the computer webcam for your video source though.

All classes will take place using Zoom desktop video. If your building is already set up to use a desktop video application with a computer, simply open a browser and enter <https://greenbush.zoom.us/j/6913388482> in the URL space. You may need to download Zoom launcher software (free download) if you don't already have it. This needs to be done in advance of the lesson.

If using a Polycom video conferencing unit (or any legacy type video conferencing unit) to connect to a ZOOM conference, make sure the unit is in "encrypted mode" then dial the following IP on the internet: 162.255.37.11 or 162.255.36.11 and once connected, they will ask for a MEETING ID: enter 6913388482 (for Kenzie at Science Center).

It's always a good idea to touch base with your district technology facilitator prior to your program to make sure all systems/equipment are in place and operational and no firewalls that might prevent you from connecting to Zoom.

Once you connect, you will enter a Zoom waiting room. Your Greenbush teacher will admit you into the final meeting room.

Classes take place at the following times:

9:00-9:45

10:00-10:45

12:15-1:00

1:15-2:00

2:15-3:00

If you log in during one of those times, you may connect during another class' lesson. If you do, please check your connection to make sure things are working properly and then leave the meeting until your scheduled time by selecting "End Meeting" in the lower right corner of your Zoom screen and click on "End Meeting". You will need to rejoin the meeting at your scheduled time. This prevents your site from interfering with the lesson currently in progress. After your lesson is finished, please leave the meeting.

If you have questions, please call Kenzie Heatherly at Greenbush (620-724-6281).

Prior to the IDL lesson, please review these cooperative learning strategies. Due to social distancing, we will only practice partner communication to follow distancing guidelines.

Round Robin

Each member of the team takes a turn sharing orally with the team.

Rally Robin

With a partner, students take turns sharing brief oral responses.

Timed Pair Share

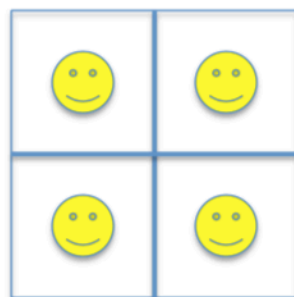
In pairs, students share with a partner for a predetermined time while the partner listens. Then partners switch roles.

Stand Up, Hand Up, Pair Up

Students move around with hands in the air and quickly find a partner with whom to share or discuss. Once students find a partner, they give each other a “high five” and stand together, ready for the next instructions.

More terms to know -

Shoulder Partner:
The person sitting on
the student's right or
left.



Face Partner:
The person
sitting facing the
student.

Physical vs Chemical Changes

Experiment #	Chemical or Physical Change	Evidence
1		
2		
3		
4		
5		
6		

Experiment 1 - Class Demo

(Instant Cold Pack
version)

Materials:

Instant cold pack

Directions:

Activate cold pack according to package directions. Observe using sight, hearing and touch (never touch the chemicals directly).

Experiment 2:

Materials:

Salt, pitcher of water, disposable cups, plastic spoons

Directions:

Pour salt into a cup so that the bottom of the cup is just covered. Slowly add water to fill it about halfway. Stir the contents. Observe using sight, hearing and touch (never touch the chemicals directly). Using the spoon, drop a couple drops of the mixture onto a black piece of paper. Blow on the paper until the water dries, what do you see?

Experiment 3:

Materials:

Baking soda, vinegar, cups

Directions:

Pour baking soda into a clear plastic cup so that the bottom of the cup is just covered. Slowly add vinegar to the cup to fill it about halfway. Observe using sight, hearing and touch (never touch chemicals directly).

Experiment 4:

Materials:

Milk, calcium chloride (road salt), plastic spoon, disposable cups

Directions:

Measure **1 spoonful** of road salt into a disposable cup. Add **2 spoonful** of milk and stir with a plastic spoon. Observe using sight, hearing and touch (never touch chemicals directly).

Experiment 5:

Materials:

Paper

Directions:

Tear a piece of paper into VERY small pieces. Observe using sight, hearing and touch (never touch chemicals directly)

Experiment 6:

Materials:

Milk, vinegar, plastic spoon, disposable cups

Directions:

Add **2 spoonful's** of vinegar and **2 spoonful's** of milk in a disposable cup. Stir with a plastic spoon. Observe using sight, hearing and touch (never touch chemicals directly).