

### GES: Ozone Garden Activity

**Lesson Duration:** Roughly 3 hours.

**Lesson Format:** In-class video: [https://www.youtube.com/watch?v=THYoUULn\\_2U](https://www.youtube.com/watch?v=THYoUULn_2U) (short version 2:57) or <https://www.youtube.com/watch?v=wZYjCaFyl64&t=845s> (long version 2:50-58:02). Followed by an organized tour of the SDH and the Ozone Garden activity (1hr).

**Objectives:**

- I am able to successfully identify ground-level ozone pollution by analyzing the leaves of bioindicator plants (cutleaf coneflower, common milkweed, snap beans, potatoes, and more).
- I am able to name and identify at least three bioindicator plants.
- I am able to successfully communicate the three components that when mixed together form harmful ground-level ozone (i.e. “bad” ozone) pollution and how I can avoid creating it myself.

**Discussion** (think about and answer these discussion questions as they appear):

*Understanding Earth's Systems*

- “How do terrestrial ecosystems respond to and contribute to environmental change?”-Danica Lombardozzi
- Why should we care about air quality?
- Is Colorado as clean as we thought?
- What are some of the negative effects that “bad” ozone has on plant and human health?
- What are some solutions to cleaner air and when are ozone levels the highest?

**Activity** (1hr):

- Count off groups of three and groups will self-assign roles.
- 1’s are responsible for diligent note-taking, 2’s are responsible for filling out the ozone garden observation sheet, and 3’s are responsible for presenting the groups findings to the rest of the class.
- Feel free to switch positions amongst yourselves. All members of the group should participate in observing ozone garden plants.
- Pay close attention to the tops of the leaves, look for clear stippling patterns that do not cross leaf veins. Any crossing of the leaf vein is indicative of insect activity or something else.
- One group in the garden at a time (10 minutes each).

- Once back in the classroom we will proceed to enter the data each group has collected into the NCAR database online (5-10 min).

**Resources:**

- National Center of Atmospheric Research (NCAR) Ozone Garden Observation Sheet:
  - <https://scied.ucar.edu/sites/default/files/images/blog/Ozone%20Garden%20Observation%20sheet%20FINAL.pdf>
- NCAR Ozone Garden Data Entry:
  - [https://www.cgd.ucar.edu/research/ozone-garden/data\\_add.pl](https://www.cgd.ucar.edu/research/ozone-garden/data_add.pl)
- Schedule a free tour of the SDH by contacting us at [sustain@uccs.edu](mailto:sustain@uccs.edu).
- Location: The UCCS Office of Sustainability is located in the Sustainability Demonstration House at 12 Cragmor Village Road. The large blue house is located AFTER The Lookout apartment complex.
- Note: Prime time to collect ozone data through bioindicator plants is from June-September. After collecting data from plants check to see if your answers match the ozone monitor data, located next to the ozone garden.