

# Weather Patterns and Acid Rain

(or What is Chicago's acid rain doing in the Adirondacks?)

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## Purpose

Students compare US regions of atmospheric acid emissions vs. acid rain precipitation, and evaluate why areas of highest emissions are different from areas of greatest acid rain intensity.

## Materials

1. [Blank map of U.S.](#)
2. Current [maps of pH, sulfate, nitrate, and other acid anions in rain.](#)
3. [Information on emissions intensity](#)
4. Earth Science Reference Tables map of prevailing winds.
5. [Map of US Topography](#) and many other maps besides.

## Directions

1. Students view map of US acid rain precipitation intensity, which is color coded by state and gives pH values. Where in the US are the areas that receive the most acid rain?
2. Using US EPA data table and the blank US map, students record state-by-state values for magnitude of emissions.
  - A. Create a color key on your map showing areas of higher and lower magnitude of emissions.
  - B. Where in the U.S. are the areas that produce the most acid rain emissions?
  - C. What might cause these high emissions?

## Summary

1. Why are the areas that receive the most acid rain not the same as the areas that produce the most acid rain emissions?
2. What effects do prevailing winds have on the distribution of acid rain?
3. What effect does elevation have on acid rain?

## Useful web links for this lab

- [Blank US Maps.](#)
- US acid rain intensity map [here.](#)
- [US EPA homepage](#) (Good resources on acid rain).
- [Weather Science Hotlist](#) (connections to other sites).
- [Topography of the U.S. and states](#), in various resolutions.
- [Air quality lesson plans](#)



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