

# Legal Aspects of Weather Modification



# Conducting Weather Modification Programs

- Laws

What laws apply to the program?

- Liability

What are the possible liabilities?

- Water Rights

Who owns the water produced?



Image of a river in an dry region.

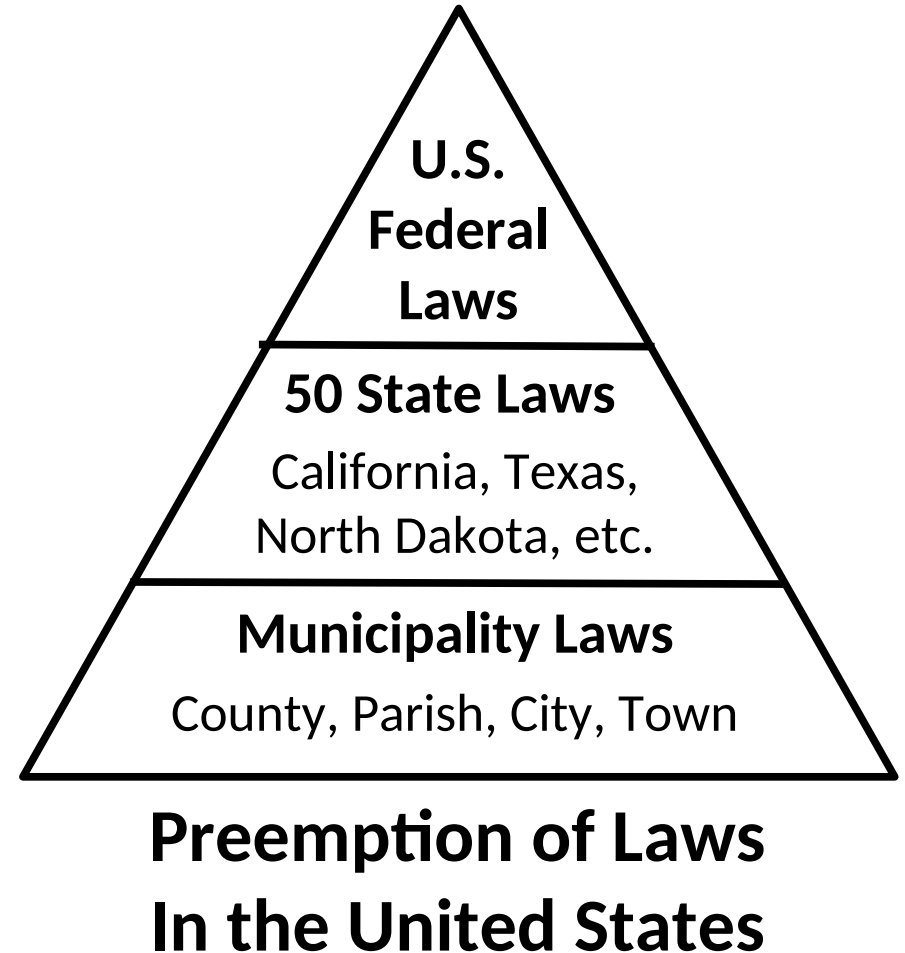
# Who makes the laws and rules?

- Legislatures
  - Express Policy – Make laws regarding regulation, funding.
- Administrative Agencies
  - Make Regulations
  - Decide Cases (Licenses and Permit
  - Administer of Programs
- Courts
  - Decide Cases (Resolve Dispute, Review Administrative Decisions)



# What are the levels of laws?

- States
  - Most have laws
  - Lots of variations
- Federal
  - Appropriations
  - Study
  - Reporting
- International
  - WMO – World Meteorological Organization





# Regulatory Agency

- Umbrella Agency
- Board
- Director
- Staff

An Overview of Federal Environmental Agencies in America



<https://blogs.rochester.edu/thegreendandelion/2017/02/an-overview-of-federal-environmental-agencies-in-america/>

# Interstate Interactions

- Permitting
- Sharing Equipment
- Water Right
- Agreements
- Liability

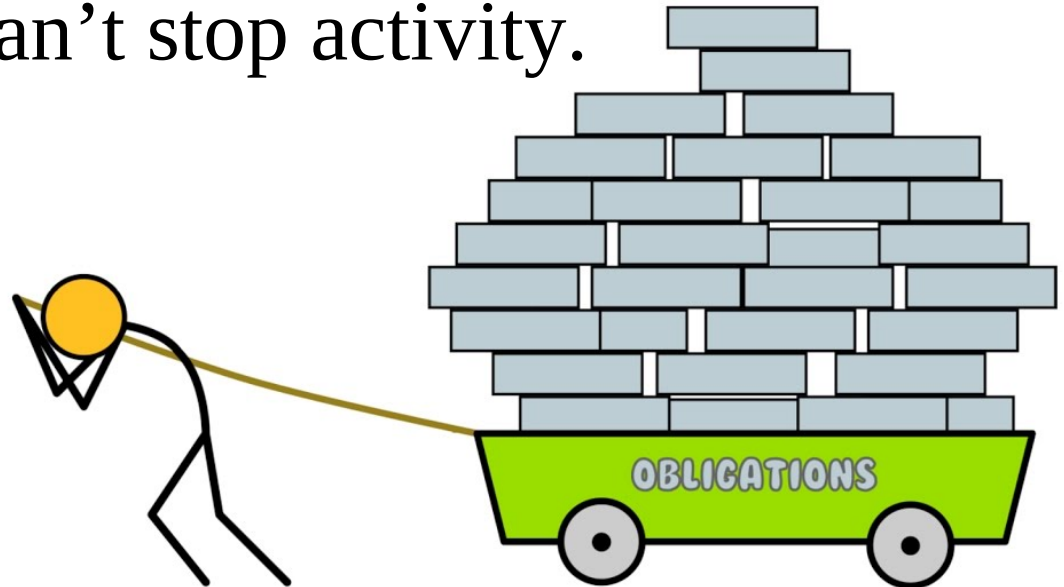
# Interstate Highw`ays in the United States



<https://www.upworthy.com/how-us-highways-are-named>

# International Obligations

- Notice given about seeding.
- Countries consult.
- Affected neighboring country.
- Decides what to do, but can't stop activity.
- Can take legal action.
- Has to prove liability.



# Common Way to Regulate

- Licensing and Permitting
  - What are some example of licenses and permits?
- Need both to conduct seeding in some states.
- License – Authority to practice profession.
- Permit – Authority to operate a given project.



Seeding Flares on Aircraft Wing



# License Criteria

- Professional Qualification
  - Training/Education
  - Or Experience
- Good Character



# Licensing Procedures

- Grant/denial
  - Application
  - Determination
- Renewal/Non-renewal
  - Application
  - Determination
- Suspension – Temporary
  - Revocation - Permanent

Image showing of Pilot's License No 1.

# Permit Procedures

- Grant/denial
- Application
  - Notices hearings determination
  - Grant as requested
  - Grant as altered
  - Denied
- Provisional/renewal/non-renewal
- Modification/Suspension/Revocation



# Federal Reports

- Authority
  - The only Federal law is Reporting
- Timing
- Contents
  - Days
  - Purposes
  - Hours
  - Seeding Agents
- Uses
  - Annual Report
  - WMO Register

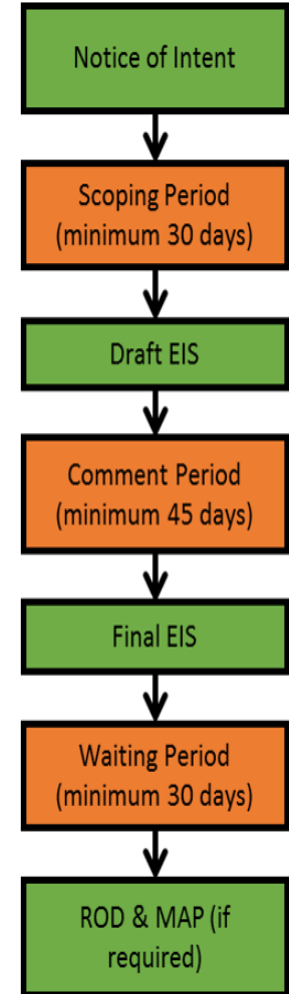
# State Reports

- Forms
- Data



# Environmental Impact Statements (EIS)

- Federal requirement under certain conditions.
- EIS are also required by some states.
- Federal EIS required when:
  - Federal dollars are involved.
  - Seeding actually done.
  - Possible significant impact on the environment.
- Process takes years, may kill project.





# Wilderness Act

- Legislation – Areas “untrammeled by the hand of man”
- Impact on Weather Modification
  - Seeding Areas
  - Data Collection



President Lyndon B. Johnson signed the Wilderness Act on September 3, 1964.

# Liability – Should this Concern You?

- Three things have to be proved to win:
  - Conduct (defendant)
  - Impact (plaintiff)
  - Causation



# Types of Liability

- Trespass (intrude on property)
- Negligence (careless)
- Nuisance (harm outweighs benefit)
- Abnormally dangerous activity



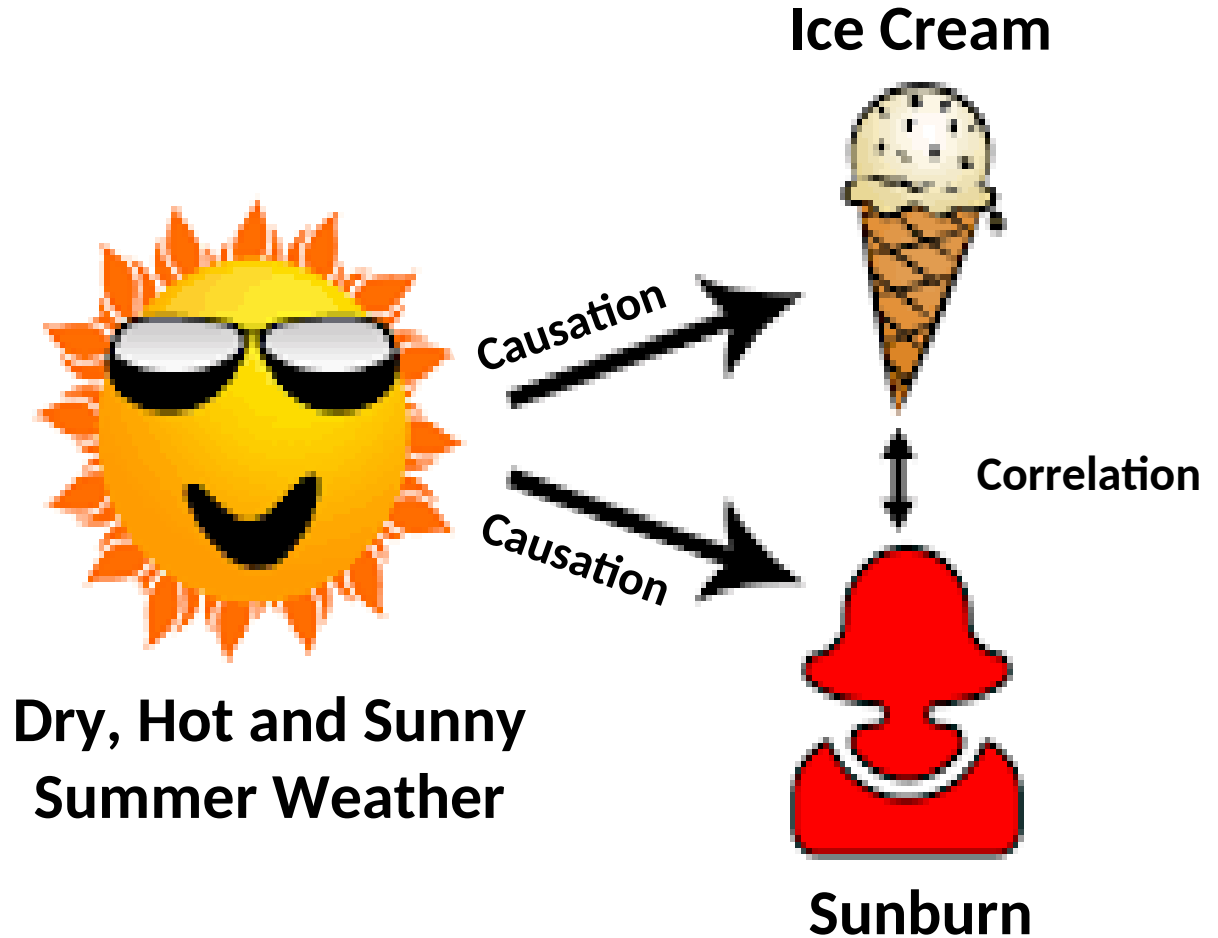
Image showing the 1997 Flood  
in Grand Forks, North Dakota.

# Harm (Impact)

- Economic
  - Expenses Incurred
  - Income lost
- Non-economic
  - Nominal
  - Intangibles

# Causation

- Hardest to Prove
- No Cases Won



# Defenses

- Immunity (government)
- Privilege (public necessity)
- Shifting cost
  - Insurance
  - Indemnification (contract)



# Water Rights: Who Gets Extra Precipitation

## Theories

- Riparian
  - Owners of land by water have equal right to use the water.
- Appropriation
  - First come, first served

## Treatment of Additional Water

- Seeder
- Landowner
  - Can appropriate
  - Prior Appropriation
  - As Natural Precipitation (ND)



Image showing rain shaft.