

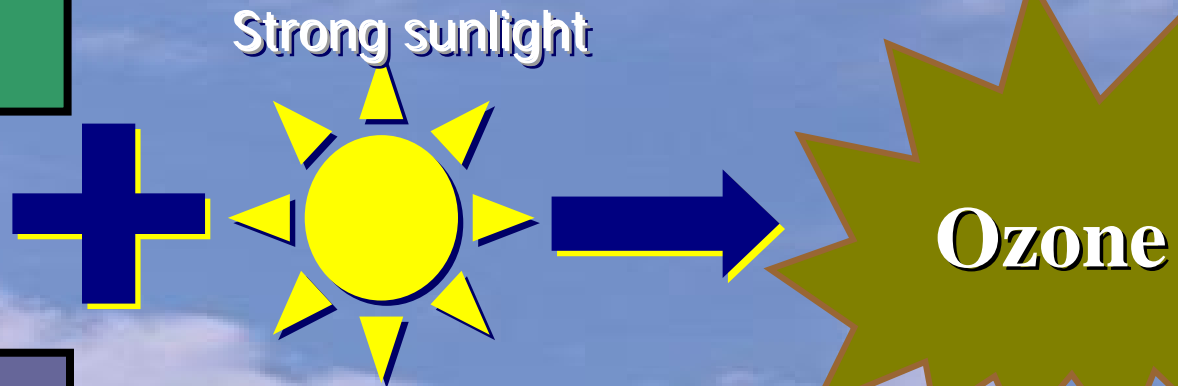
Ozone Formation

Volatile Organic Compounds

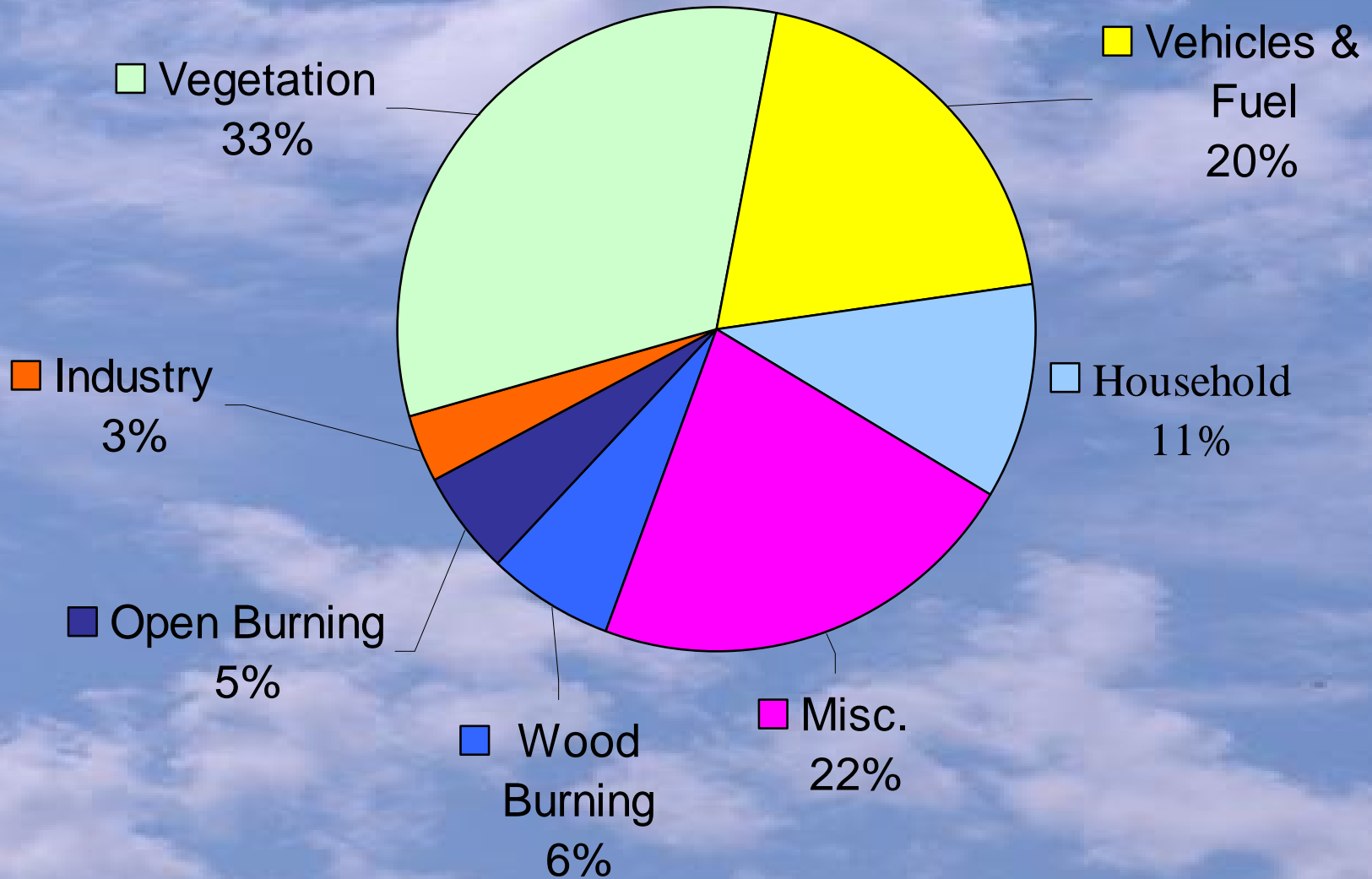
- *industrial sources*
- *biogenic sources*
- *fuel sources*

Nitrogen Oxides

- *transportation sources*



Sources of Volatile Organic Chemicals Treasure Valley 1999



Plants as a Source of Air Pollution

All plants emit volatile organic compounds, some more than others.

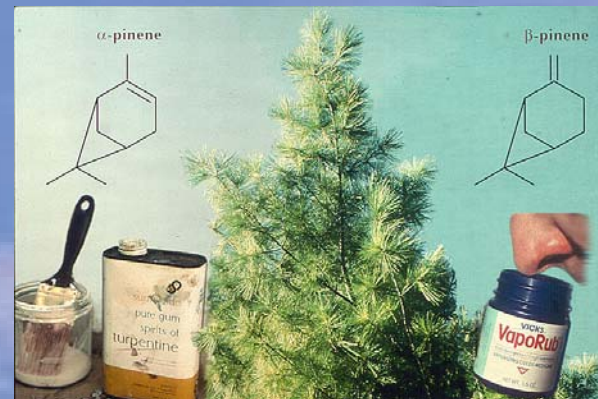
Some examples of trees that have high emission rates include:

- Eucalyptus
- Poplar
- Black locust
- Oak
- Sycamore
- Blue spruce

Smokey Mountains



Monoterpenes



Plants also reduce Air Pollution



Uptake of gaseous air pollutants through the leaf stomata

Deposition of air pollutants on leaf surfaces

Shade and cooling reduces evaporative emissions and emissions from power production



Plants Sensitive to Air Pollution

Ozone can cause premature aging or death of plants, beginning as a yellowing or bronzing and early death of the lower leaves.

- ozone over 80 ppb for 5 hours, or 70 ppb for a day or two sufficient to injure exposed foliage
- crop yields can be reduced up to 10%
- plants become more susceptible to other stress – disease, bugs
- white pine, soybeans, and alfalfa are extremely sensitive

radish



potato

Air Quality Vegetation Management

- Increase the number of healthy trees.
- Maximize use of low VOC emitting trees.
- Sustain large, healthy trees.
- Plant trees in energy conserving locations.
- Plant trees to shade parked cars.
- Supply ample water to vegetation.
- Plant trees in polluted areas or heavily populated areas.
- Avoid pollutant sensitive species.
- Utilize evergreen trees for particulate matter reduction.

