Chemical Forms

Developed by

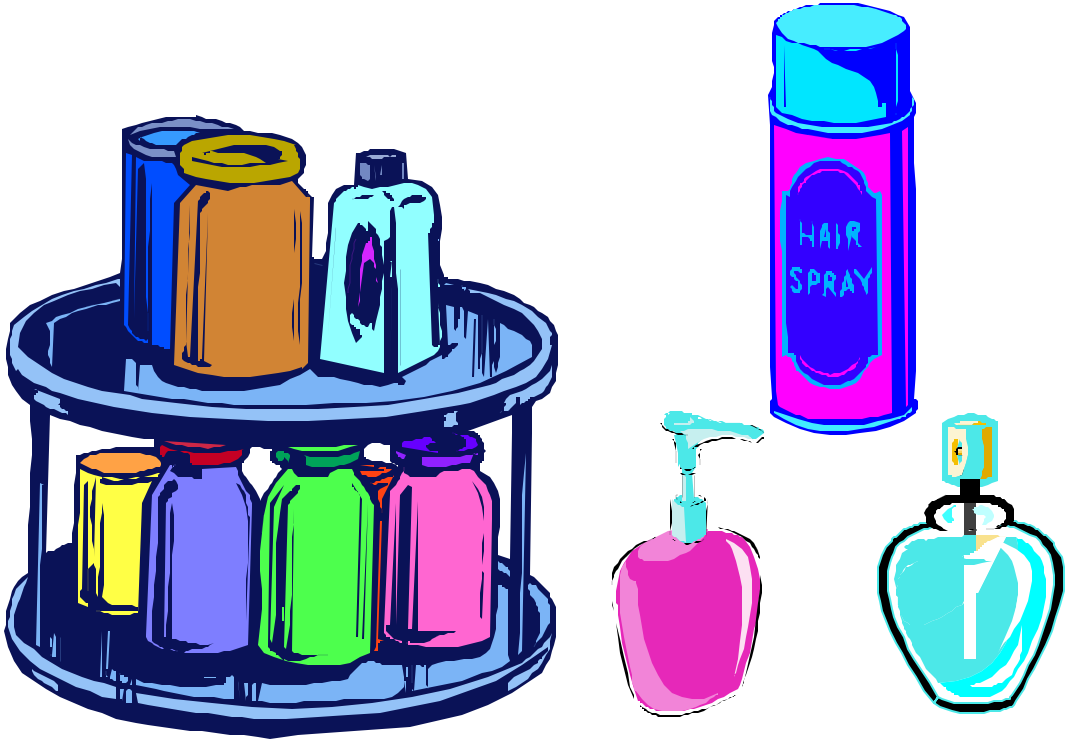
Western Massachusetts Coalition for Occupational Safety and Health

Funded by

The Toxics Use Reduction Institute

Chemicals Come in Different Forms:

- Solids
- Liquids
- Gases
- Vapors



What Do We Need to Know?

- **What are the chemical forms of the hazardous ingredients in the salon product?**
- **Can this product's form change while in use? (When you add chemicals to a product or heat it, it can change form.)**
- **How can this product get into the worker's or client's body in its different forms?**

Chemical Forms

Solids: *Small Particles*

Powders

Chemical Forms
Solids: *Small Particles*

Dust

The dust contains silica from from acrylic nail filings.

In one Illinois Dept. of Public Health study at five salons, the silica exposure levels were below the NIOSH exposure limit.

Chemical Forms

Solids: Small Particles

Fibers

Asbestos Linings in older model hand held and bonnet style hair dryers.

Contact the Consumer Product Safety Commission at 1-800-638-8326 to check your dryer model for asbestos.

Chemical Forms: Liquids

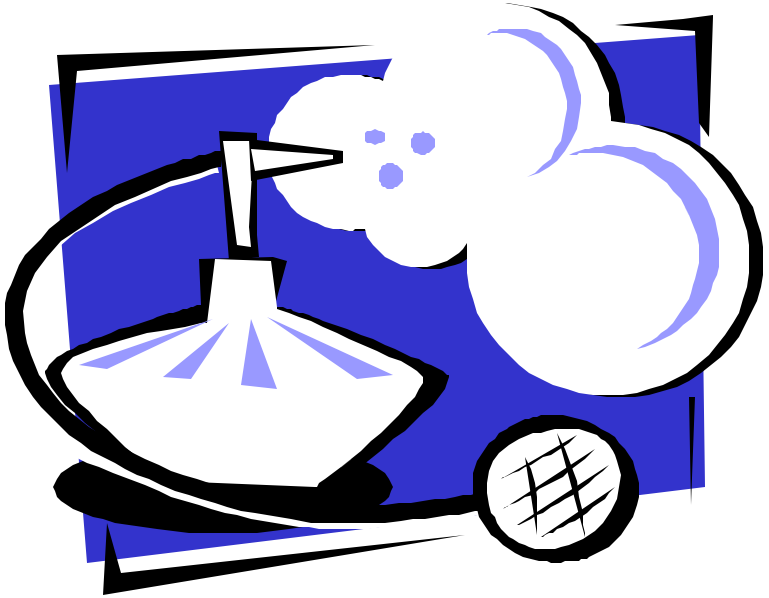
A Liquid

is a chemical that flows:

- **Nail polish**
- **Nail polish remover**

Chemical Forms: MIST

A liquid that is sprayed into the air and becomes small droplets.



Chemical Forms: Vapors

- **Vapors come from materials which are normally liquid or solid at room temperature and have evaporated.**
- **Vapors float freely in the air.**

Vapors

From Solvents in:

- **Nail Polish**
- **Polish Remover**

Properties of a Liquid

Evaporation Rate

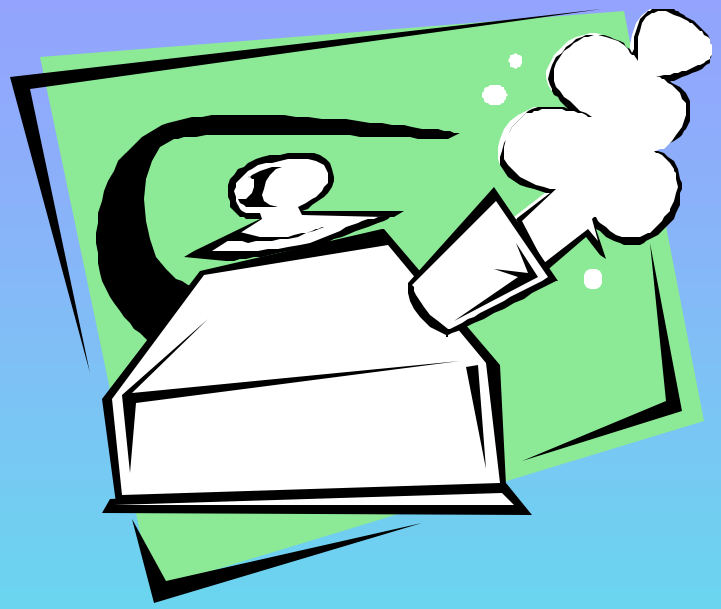
- **Is how much vapor the liquid is putting into the air.**

- **The faster it evaporates, the faster it gets into the air, and the more of it you get in your lungs:**
  - **than 1 is faster**
  - **than 1 is slower**

- **It is similar to vapor pressure, but uses a different medium to make comparisons.**

Properties of a Liquid

- ***Boiling Point*** **- is the temperature at which liquid changes to a vapor.**



- **The opposite change in phase is the *Condensation Point.***

The boiling point is a good indication of how easily a product will evaporate and give off vapors.

It is an issue for flammable liquids.

Properties of a Liquid

- ***Vapor Pressure*** **- how much vapor is produced at room temperature. Uses mercury (MM) to compare. As the temperature increases, so does the pressure, increasing flammability:**

  > than 1 is higher (toluene 28.4 MM HG at 25 degree C)

  < than 1 is lower (potassium hydroxide in manicuring 1 MM HG @ 714 Degree C)

- ***Vapor Density -*** **compares the weight of a vapor or a gas to air:**

  > than 1, it is heavier than air, may sink if there is little air movement (toluene 3.1)

  < than 1, lighter than air, will rise (ammonia .596)

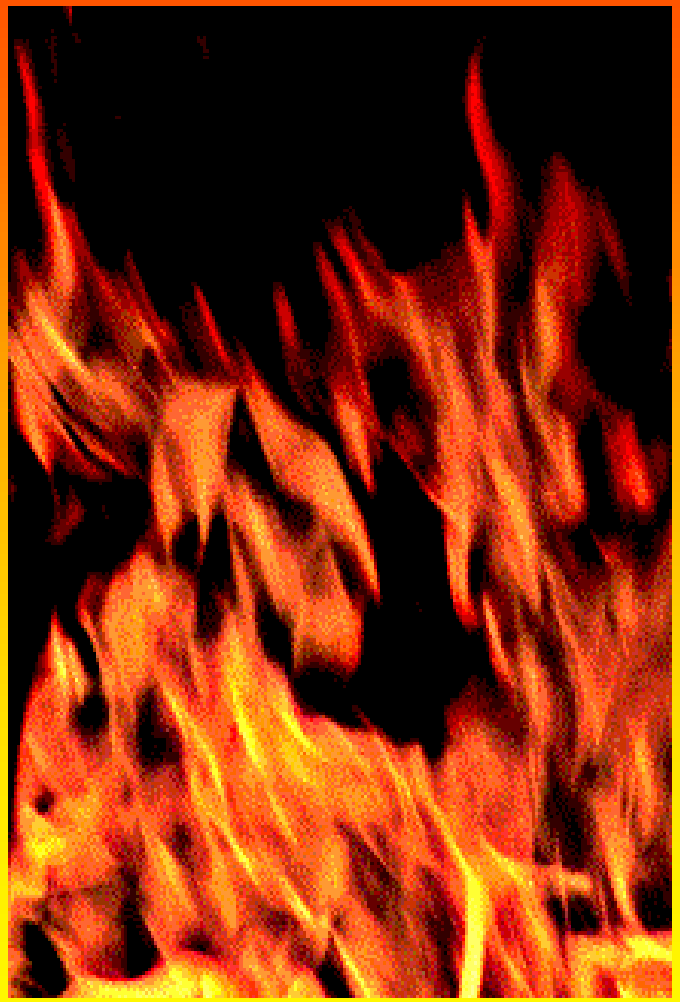
Chemical Forms: Gases

Butane and Propane Propellants

- Gas has very low density, fills the space it is in, and moves freely in the air. It can easily mix with other gases.

- Gases stay in gas form even at room temperature. They expand and contract with temperature.

Flashpoint



Is the lowest temperature at which a liquid gives off enough vapor to ignite and produce a flame when an ignition source is present.

- **A low flash point can ignite easily.**
- **A high flash point is harder to ignite.**