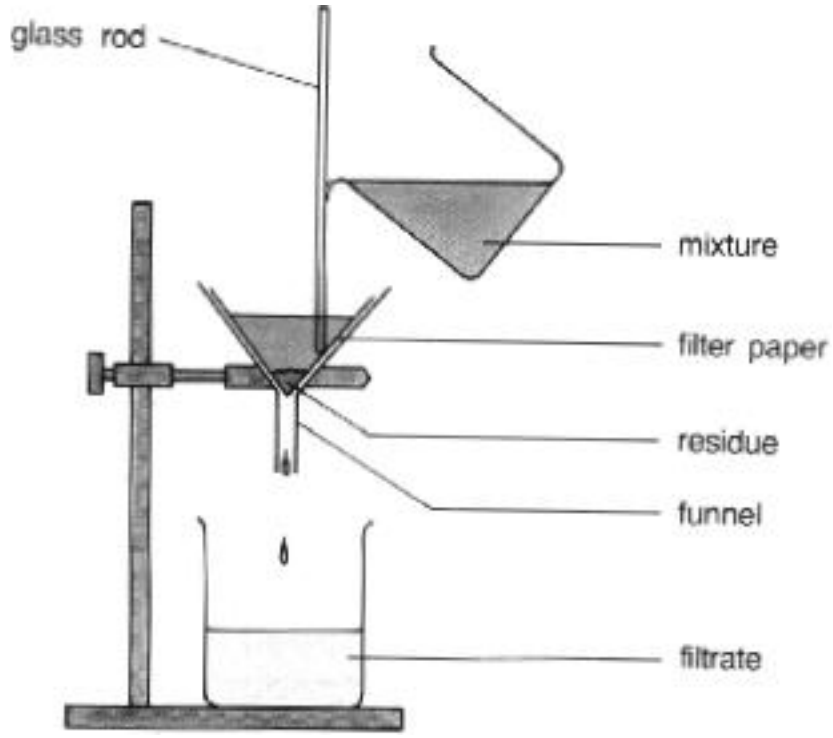
Mixtures are physically combined and therefore separation techniques are based upon their physical properties.

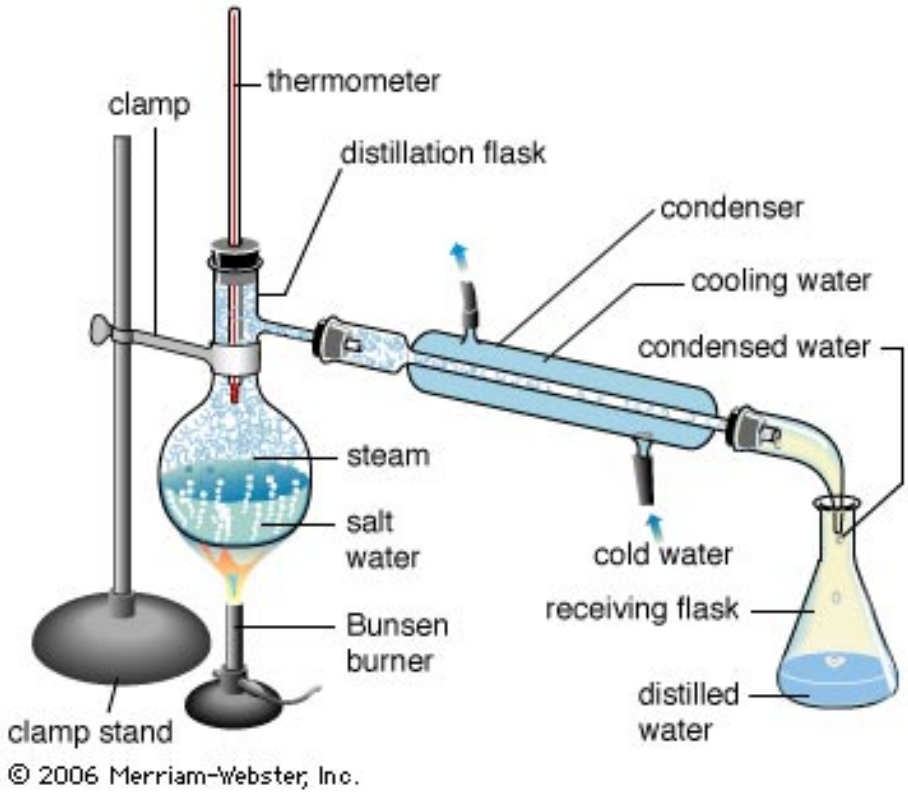
Separating Mixtures

filtration



filtration: removes solids from liquids based upon their size

distillation

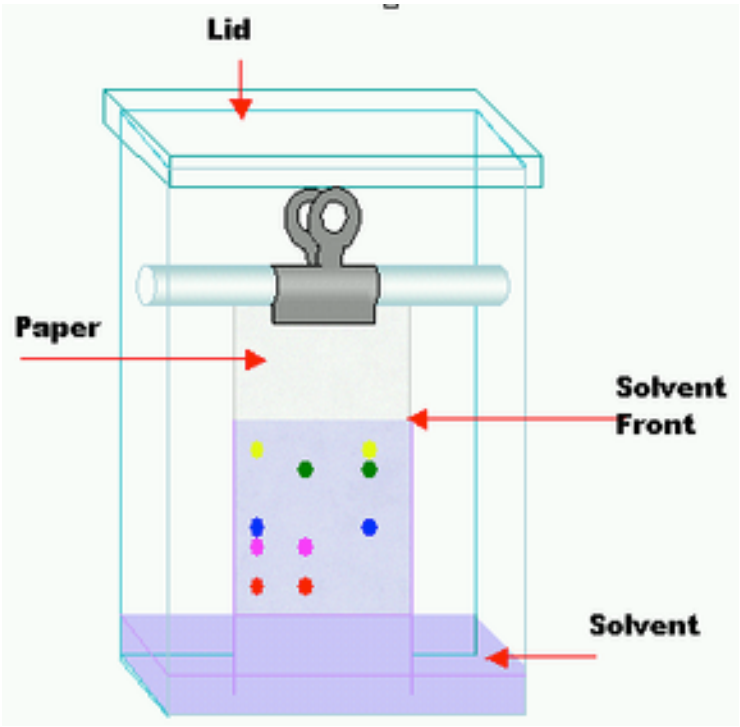


distillation: separation based upon differences in boiling points (usually 2 liquids)

crystallization

crystallization: recovers dissolved solids based upon evaporation

chromatography



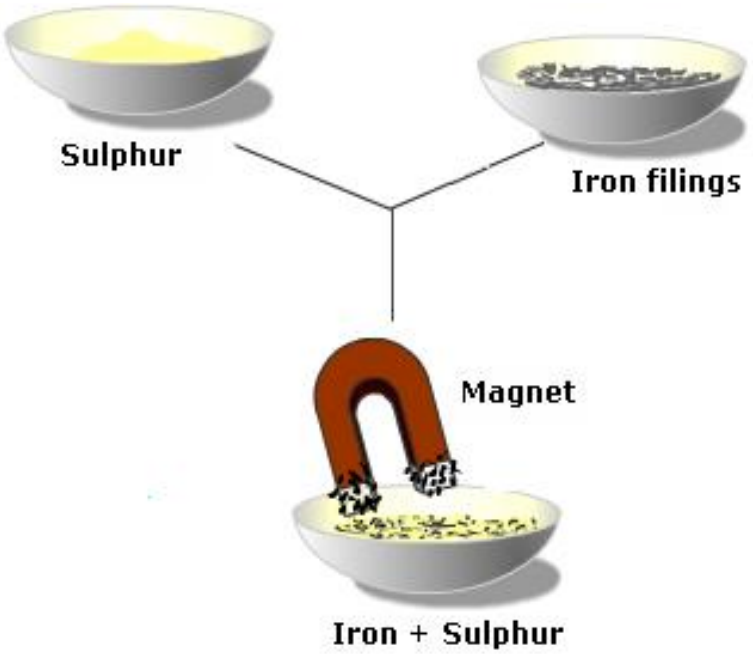
chromatography: components separate at different rates

Chromatography

A mixture, such as the ink from a marker, is made up of several different compounds, each with a different color. Each of these various compounds have different sized particles.

These different sized particles flow through the paper at a different speeds, thus separating the colors.

Magnetic separation: **separate magnetic components from a mixture containing non-magnetic components**



gravity method: separate mixtures with different densities

Pure Substance

A pure substance is a form of matter that always has a definite and constant composition.

All samples of the pure substance must have the same properties under the same conditions.

This unique set of properties provides the identification for a pure substance.

Types of pure substances

Elements

Cannot be broken down into simpler substances by chemical means.

The building blocks for all types of matter.

91 naturally occurring elements

Compounds

A chemical bonding of two or more elements.

Can be broken down into elements using chemical, but not physical means.

Has a definite, constant elemental composition.

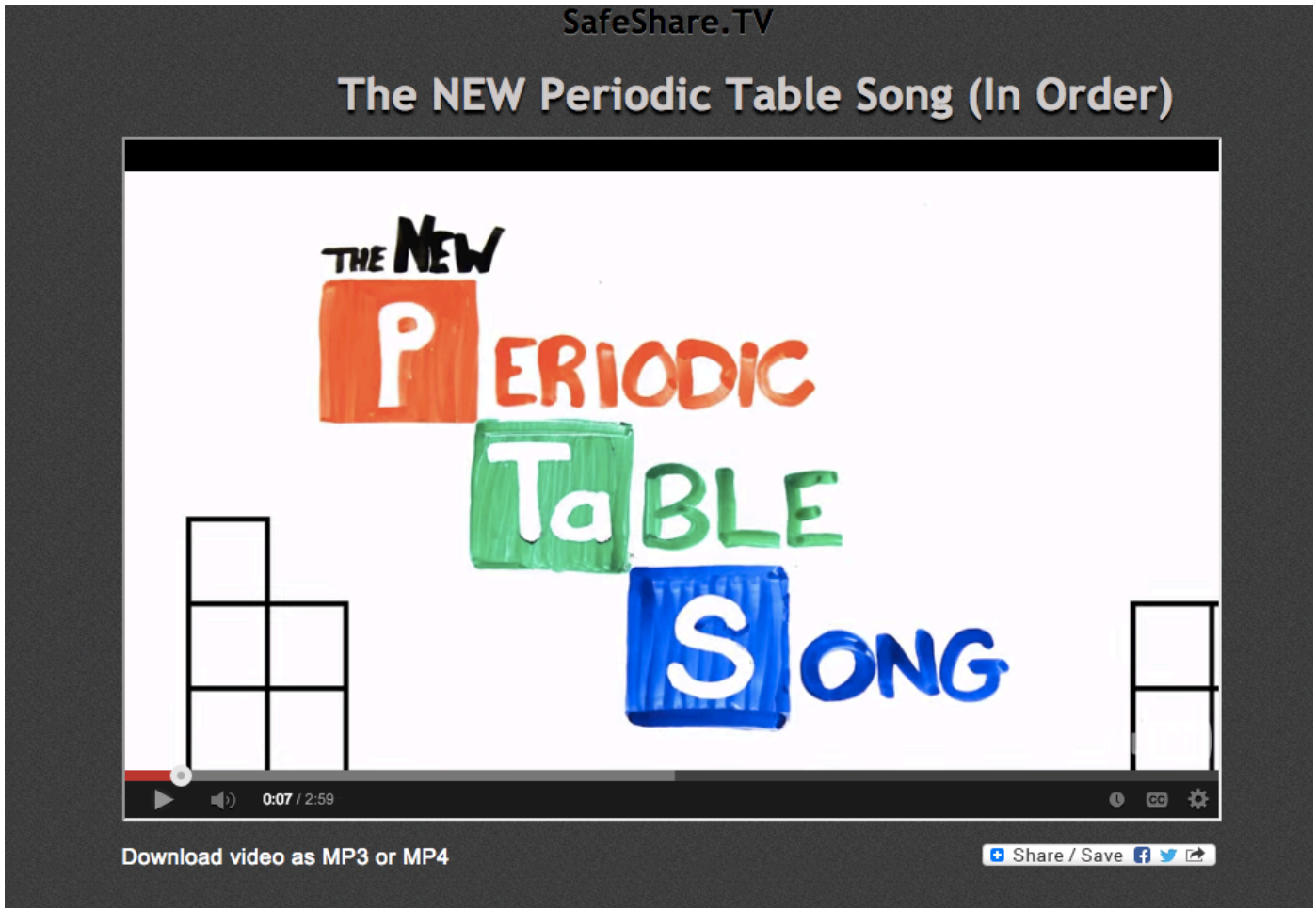
Properties of the compound are different than the elements that make them.

Compound ≠ Mixture

Compounds have definite composition while mixtures have variable composition.

A compound always has properties that are different from the substances used to produce it. Substances in a mixture retain their individual identities.

Individual components in a mixture can be physically separated, but components in a compound are chemically bound together.



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