Section 4: Dissolving Without Water



Polarity determines which solvent will dissolve a substance.





When Water Will Not Work

- Water is often referred to as a universal solvent because it can dissolve so many substances.
- However, water's dissolving properties are based on its polarity, and it cannot dissolve nonpolar substances.



When Water Will Not Work

Nonpolar solutes

- Nonpolar molecules do not dissolve in water, or only dissolve a very small amount.
- This accounts for the way oil spills look on water: the large hydrocarbon molecules in oils are not attracted to the polar water molecules, and will not dissolve.

Nonpolar solvents

- Many nonpolar solvents are connected with specific jobs, such as turpentine or dry cleaners.
- Many are toxic or flammable



Versatile Molecules

- Some substances are versatile because the have a nonpolar end and a polar end.
- These molecules can dissolve in both polar and nonpolar solvents.



Versatile Molecules

How soap works

- Soaps are substances that have polar and nonpolar properties.
- The ionic end of soap dissolves in water, and the hydrocarbon end dissolves in oily dirt.
- This removes dirt from skin, clothes, etc., and allows it to be washed away by water.



Polarity and Vitamins

- Some of the vitamins you need, such as vitamin A, are nonpolar and can dissolve in fat, which is another nonpolar substance.
- Because fat and fat-soluble vitamins do not wash away with the water that is present in the cells throughout your body, the vitamins can accumulate in your tissues.



Polarity and Vitamins

- Some vitamins, such as vitamins B and C, are polar compounds.
- Polar vitamins dissolve readily in the water that is in your body.
- These vitamins do not accumulate in tissue because any excess vitamin is washed away with the water in the body.

