Why Are There Acids In the World?

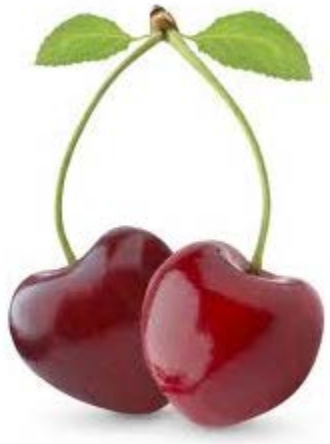
Acids form by burning a non-metallic substance like carbon, sulfur, nitrogen or a witch and then adding the product to water. (Witches, as you know, should only be burnt if it's their wish to be cremated.) The process can occur with or without technology. If sulfur dioxide formed by burning coal or roasting ores is not filtered and turned into gyprock, it will meet such a fate. Excess acids in the atmosphere worsen respiratory diseases. But some of the carbon dioxide from respiration has, for eons, become carbonic acid and played a vital role in the carbon cycle. Carbonic acid dissolves minerals from rock and serves as a source of bicarbonate ion, which is not only used by shell-creating organisms but it's used by cells and organisms as a protective buffer against excess acid. Any acid, has properties that differ from those of water. Acids interact with protein receptors on the tongue and taste sour and do a great job at conducting electricity.

Many metals like magnesium and zinc will surrender loosely-held valence electrons to the hydrogen ions of acids, which in turn will release neutral hydrogen gas. The hydrogen ion, H^+, is really a naked proton, piggybacking on a water molecule forming a hydronium ion, symbolized as H_3O^+. But for every pair of electrons that becomes available from a metal in contact with the acid, two naked protons leave their respective water molecules and bond themselves to form the H_2 gas that bubbles out. The bubbles escape at a rate that's proportional to the concentration of H^+ or "nudity" in the solution.

Acids maintain the color of some compounds, most notably those of the red pigments in roses, apples and autumn leaves. They also remove the fuchsia from the reaction between oven cleaner and a former ingredient of a laxative (phenolphthalein). Naked protons have the ability to alter chemical bonding and the associated

energy states of electrons in molecules; then light photons of a different frequency are needed to promote electrons.

Most people do not realize that acid forms in every plant when water splits up to form oxygen as electrons flow to light-excited chlorophyll molecules. The subsequent acidic gradient between membranes of the cells' chloroplasts --- essentially a voltage--- leads to the formation of ATP, which drives all energy-requiring reactions in plants, except for those directly stimulated by visible light. Contrary to popular belief, lightning and ultraviolet were probably not the energy sources of primordial life. What's more likely was a much simpler mechanism that made use of the potential energy of protein gradients.



All plants and vegetables are acidic because their cell vacuoles concentrate acid to activate enzymes that quickly degrade plant material when tissue is ruptured. In fact, the vast majority of foods are acidic; the few that are slightly above neutral pH include lobster and shrimp. Eating acidic foods does no harm to the stomach. The concentration of its acid is ten to a million times stronger than any fruit or vegetable, so there is virtually no change to its pH after one eats several fruits.

Is there a substance that is the antithesis of an acid? Yes. It's called a base or an alkaline product. Bases are bitter compounds formed by the reaction between water and a burnt or oxidized metal. They negate the effect of acids by converting the naked protons back to water. This happens because H^+ and the ion produced by bases (OH^-)neutralize each other to form water. Bases happen to form while a metal such as iron rusts. Does this imply that acid can help rusting? Unfortunately not! The initial product of iron corrosion forms a basic coating ($Fe(OH)_2$) on the iron which temporarily slows down further corrosion. But the coating's negative

ion can be displaced or neutralized by salt’s chloride or acid, respectively. In either case, rusting is accelerated.