

1.0 Introduction

Where does electricity come from? To know that, you must first understand something about the physics of matter. Studying the nature of matter lays the foundation for understanding electrical theory. Knowing the theory will give you confidence in the practical aspects of electrical work.

When people have a hard time understanding and applying the *National Electrical Code (NEC)*, the root cause is often a lack of knowledge of the basic physics behind electricity. When you know the physics, then you can understand the rules, codes, and laws that arise from it.

1.1 Matter

Everything on earth that has weight and occupies space is called matter, which is made up of atoms of elements. When the atoms of elements combine, they produce compounds. The smallest particle of a compound is called a molecule. **Figure 1-1**

1.2 Atomic Theory

An atom contains three types of subatomic particles: electrons, protons, and neutrons. The central part of the atom is called the nucleus and it contains protons (positive charge) and neutrons (no charge). Electrons (negative charge) orbit around the nucleus. **Figure 1-2**

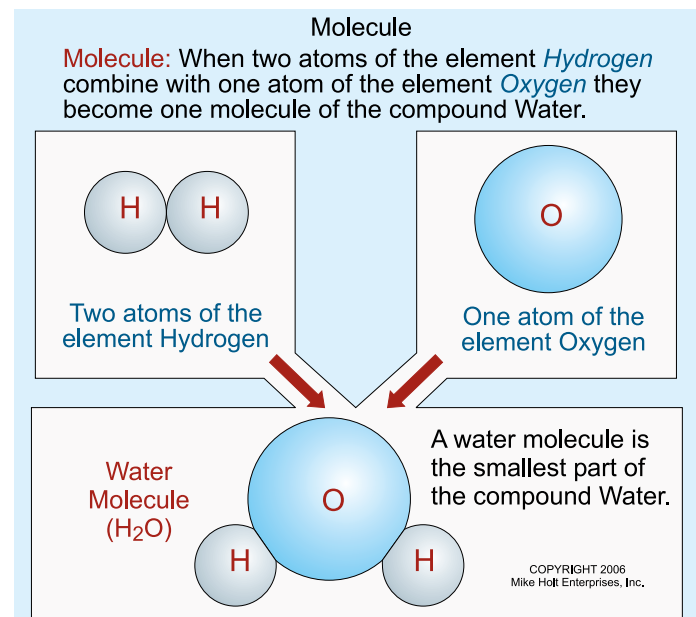


Figure 1-1

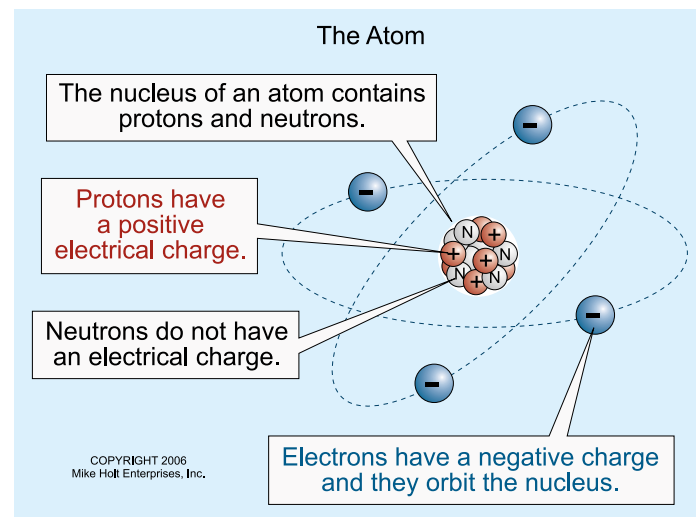


Figure 1-2