

## THE ABCs OF IONS

We spend our lives submerged in an atmospheric ocean of nitrogen, oxygen and a small percentage of other elements, plus the debris of our industrial world. However, there is another characteristic of air, not chemical, but electrical, which has recently become of interest to scientists. While it has long been known that the air we breathe contains molecules with electrical charges (both positive and negative), recent studies have shown that the lack or imbalance of these minute electrified particles, called ions, affects the environment in which we live and breathe.

The accepted scientific wisdom is that there are somewhere between 1,000 and 2,000 ions in every centimeter of air over open land. These ions are usually found in a ratio of five positive ions to four negative ions. It is in this ion balance that life evolved.<sup>1</sup> However, most urban areas with buildings of masonry, glass, steel and plastics, built amid mazes of roads, sidewalks, and parking lots, tell another, less happy story. In cities like New York, San Francisco and many foreign capitals, there may be no detectable negative ions at all during heavy traffic and high pollution periods. Researchers have shown that most of us who live, work and travel in closed spaces suffer some degree of negative ion starvation or positive ion overabundance. Researchers have also discovered evidence that an overabundance of positive ions may adversely affect living systems in our environment.

### **What are Ions?**

Modern chemistry's "picturing" of the unseen structure of matter reveals the atom as a nucleus containing positive protons surrounded by "cloudy layers" of orbiting negative electrons. When the outer electrons of two or more atoms of the same or different elements join together, the resulting particle is a molecule. Molecular oxygen, O<sub>2</sub>, is a prime example of the small gaseous molecules in the air we breathe. It remains neutral as long as the proton-electron balance is maintained. Because of an equal number of protons and electrons, atoms have no charge. However, if an electron is lost, the molecule becomes positively charged; if an electron is gained, the molecule becomes negatively charged and an ion is created. The natural production of ions may result from solar or cosmic radiation or the more mundane friction between air masses such as between rapidly moving hot, dry air and the ground.

### **Nature's Ion Generators**

Certain events occurring in nature, such as lightning, waterfalls and air friction can cause electrons to be torn loose from a molecule. These "orphan electrons" are then "adopted" by other nearby molecules, transforming these molecules into negative ions. The parent particles, of course, become positive ions. Negative ions are themselves the electrical energy carriers of the air.

### **The Ion Effect**

There are some amazing clues to how an excess of positive ions and a lack of negative ions can produce uncomfortable effects. These effects have been studied by the outstanding scientist Dr. Albert Krueger, Professor Emeritus of The University of California at Berkeley. Dr. Krueger

startled the scientific world when he demonstrated that small air ions are biologically active and can stimulate the overproduction of the powerful chemical serotonin. Serotonin is a very active neurohormone causing profound nerve, glandular and digestive effects throughout the body. Tests show positive ions increase the production of serotonin and negative ions decrease it. These findings have been corroborated by other scientists studying the effects of positive ion excess. The four major effects of positive ion excess are irritation, tension, exhaustion and a hyperthyroid response. The common symptoms of dizziness, headaches, depression, anxiety and a generally lower level of physical and mental function were shown to be alleviated and, in most cases, reversed by increasing the negative ions in the air.

### **Other Bio-Ionic Effects**

- Experiments with plants, growing in an ion-enhanced atmosphere, show a marked increase in size and growth rate.
- Airborne bacteria greatly diminish in number when there is a high negative ion count in the air.
- Treatment with negative ions has produced dramatic improvement in the healing of severe burns and the reduction of pain. (Dr. I. Kornbluh, "Polarized Air as an Adjunct in the Treatment of Burns," Philadelphia Northeastern Hospital)

Synthetic materials, forced air circulation, improper humidity levels, excess static electricity, and a lack of fresh air all contribute to ion imbalance. Careful attention to interior environmental planning creates an optimal living and working environment. Making sure natural negative ion levels are maintained, along with use of full-spectrum lighting; natural materials on walls, floors, and furniture; windows that open to the outside; and proper use of plants, can make any interior a better place to live.

### **Appropriate Technology**

Growing awareness of the human as a body/mind/soul complex, integral with a larger but equally vital environmental complex, requires concern for even the most subtle disturbance. Defense against this kind of ecological impairment has already begun, with the electronic assistance of small, plug-in negative ion generators that insure against possible electrical imbalance in enclosed spaces, designed for homes, offices, stores, hospitals, schools and even your car. You can now at least improve your own corner of the world.

### **How Negative Ion Generators Clean the Air**

Negative ion generators cause an electron to be added to molecules of oxygen and other trace gasses in your room air. This process creates ions with a negative charge.

When the ions become negatively charged, they collide with airborne contaminants such as dust, mold spores, pollen, bacteria and many other particles. The negative charge of the ion is then transferred to the particle. Surrounding this negatively charged particle are many other particles that are positively charged. These positively charged particles are drawn to the negatively charged particle and begin to build up. Eventually these particles, being built up like a snowball, become too heavy to stay in the air and fall harmlessly to the floor or nearest surface, where they are cleaned up by dusting or vacuuming. If a room is kept reasonably free of incoming pollutants, the air becomes very clean and free of airborne particulates.

In addition, negative ions aid in mood elevation and increased oxygen intake, resulting in a feeling of alertness and vitality, similar to the feeling we get when we are in a beautiful forest or near a crashing waterfall; or breathing crisp, clean mountain air.

Article adapted from from “Our New Age” by Gene Fawcett

<sup>1</sup> The Ion Effect by Fred Soyka, Bantam Books, 1977