HEAVY METALS AND CHRONIC DISEASE

Dr. Christopher Calapai, D.O.

How common exposure is linked with Alzheimer’s, Parkinson’s, Cancer, Cardiovascular and virtually all disease
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Heavy metals and chronic disease:
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Chapter 1:
Heavy Metals — What Are They?
Heavy metals are found in the air, the soil and the water. Some occur in nature and some have been created by mankind.

They take a number of chemical forms, transforming from one form to another in changing conditions. They’re found as single elements, or in combination with other chemicals, forming compounds like oxides or salts.

According to the Biology Online Dictionary, an element is “a substance that cannot be decomposed into simpler substances by chemical means, and is made up of atoms all with identical number of protons”.

According to MedicineNet.com, the atom is “the smallest part of any material that cannot be broken up by chemical means. Each atom has a center (the nucleus) which contains protons and neutrons. Electrons orbit around the nucleus. The atom is primarily empty space”.

In the water, heavy metals may change chemical form according to acidity levels, to the temperature of the water, and depending on whether or not oxygen is present. They may also change because of the presence of other chemicals or organic matter, or suspended particles.

Methylation involving bacteria or chemical processes can transform heavy metals into different forms. The new molecules created in these processes are highly dangerous to both plant and animal life because the molecules are absorbed easily.

About two thirds of the chemical elements in the periodic table are metals. “Periodic” here means recurring trends in the properties of the elements. This periodic table is the framework used in chemistry to classify and compare different chemical behaviors.
According to the JRank Science and Philosophy’s Science Encyclopedia:

- Elements in the periodic table are listed with their element symbols

- Elements in the periodic table are listed with their atomic mass

- Elements in the periodic table are listed according to their atomic number (the number of protons within the atomic nucleus)

In 2011, 118 chemical elements are found in the periodic table. Ninety-four of these are found in nature, and the other twenty-four are man-made. Some of these metals are toxic, including those termed heavy metals.

Metallic chemical elements with high density and which are poisonous at low concentrations are considered heavy metals. Some of these metals, like arsenic and selenium, are actually essential for survival in small amounts, but in higher doses they are poisonous. Other metals like lead and mercury are nothing but poison, offering no benefits of any kind. They can be stored in the body and can open the door to serious health problems.

Depending on the definition one uses, there are around 40 different heavy metals. According to the Gale Encyclopedia of Public Health:
• Over a dozen elements that are categorized as metals or metalloids are considered heavy metals

• Heavy metals usually have a density that is over 5 g/cm³

• Metalloids counted among the heavy metals are elements containing metal and non-metal characteristics, such as arsenic, cadmium, chromium, lead and mercury

These substances don’t degrade and can’t be eradicated. They can be found anywhere and everywhere. According to the Oxford Dictionary of Biochemistry:

• Heavy metals are the salts of some metallic elements of atomic number greater than 11

• This relates to their levels of toxicity and their capacity for covalent bonding

• No agreement or consensus exists as to the definition of a heavy metal

According to the Environmental Illness Resource, the definition of heavy metal is not definitive. “Toxic metals” may be a more appropriate term, since some beneficial metals like copper and zinc are technically heavy metals, and some toxic metals like aluminum and arsenic are not technically “heavy” enough to qualify for this term.

Chapter 1: Heavy Metals — What Are They?