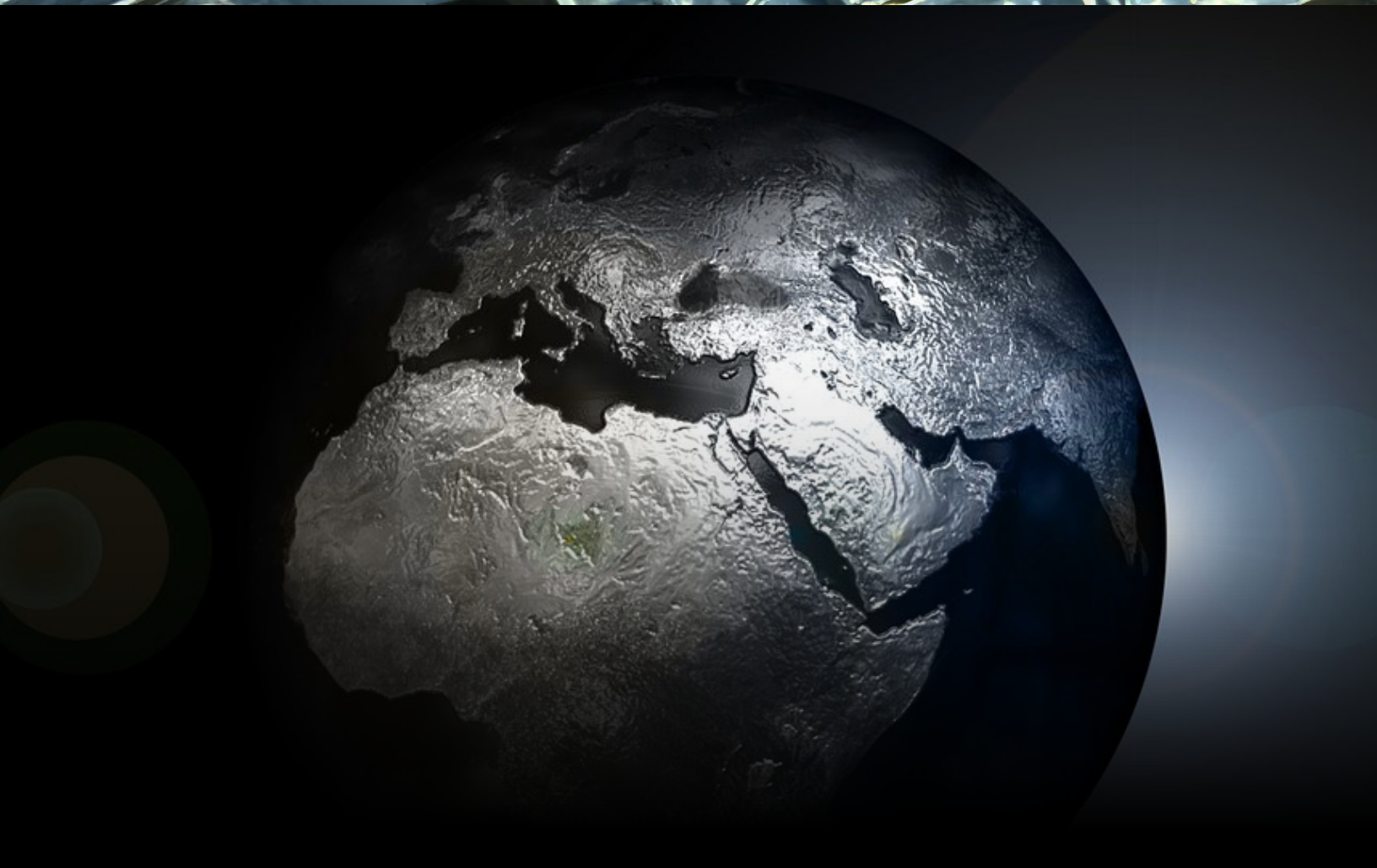
AGE OF ALUMINUM



CMSRI Children's Medical Safety Research Institute

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Age of Aluminum Timeline

1886 -- Industrial smelting of aluminum begins

1906 -- First known case of Alzheimer's disease

1910 -- Introduction of commercially available aluminum foil

1927 -- Federal Trade Commission hearing on the toxicity of injected aluminum

1937 -- Aluminum introduced into vaccine adjuvants

1942 -- First diagnosed case of autism

1959 -- Introduction of the aluminum beverage can

1973 -- First measurement of accumulated aluminum in the brain of Alzheimer's patients reveals elevated levels

1989 -- Study shows silicon protects against aluminum toxicity in fish

2016 -- Highest levels of aluminum recorded in human brain found in brains of deceased victims of familial Alzheimer's disease

"The Aluminum Age"

Today, we are living in **the Aluminum Age.**

Throughout the history of humankind, we have lived through various "metal ages" including the Iron Age and the Bronze Age. Towards the end of the nineteenth century, a method was developed to make aluminum metal, salts, and compounds from the abundant aluminum ores that constitute the earth's crust. This landmark discovery changed aluminum from being considered a rare and precious metal, with a similar commercial value to gold, to a metal which was cheap and abundant. It is the lightness of aluminum metal and also the reactivity of the free soluble aluminum ion that make aluminum the most adaptable of metals. No other metal could be used to make the fuselage of an airplane while being the active ingredient in an antiperspirant and also the coloring agent used for a child's favorite candy. No other metal, perhaps in history, deserves an "age" like aluminum! The advent of the Aluminum Age resulted in an immediate and burgeoning increase in human exposure to aluminum. Within a few decades, a significant body of scientific research and medical reports began to question the safety of compounds absorbed in humans through aluminum products, such as utensils used in cooking. One might have expected that after one hundred years of ongoing controversy that some consensus would have been reached on the role of aluminum in diseases such as cancer, diabetes and neurological conditions. These questions remain unanswered primarily because neither the global aluminum industry nor governments (that have allowed the unfettered growth of the use of aluminum products) are prepared for the answer. While continuing to implicate aluminum in human disease, new research is also offering solutions to living safely in the Aluminum Age without the need to suffer the consequences of biologically available aluminum.

Christopher Exley PhD, FRSB
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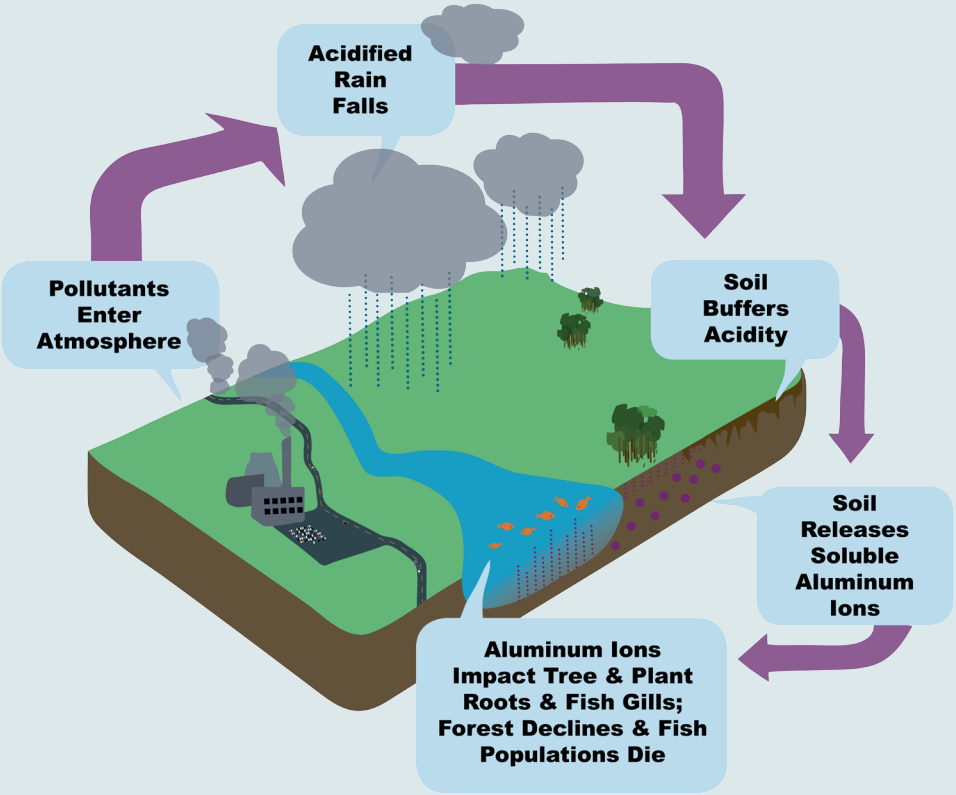
Aluminum in the Environment

Aluminum is the third most abundant element in the earth's crust and the most abundant metal. However, for most of geological history, aluminum has remained isolated from biological life. As such, it has no biological function because no organism ever evolved to utilize it. Then came the Industrial Revolution. The earth's atmosphere was not prepared for massive burning of fossil fuels and the subsequent acidification of rainwater. Acid rain released aluminum from its inert geological stores into bays, lakes, and ponds where it has reacted with tree and plant roots and with the gills of fish, causing irreparable damage to local ecosystems.

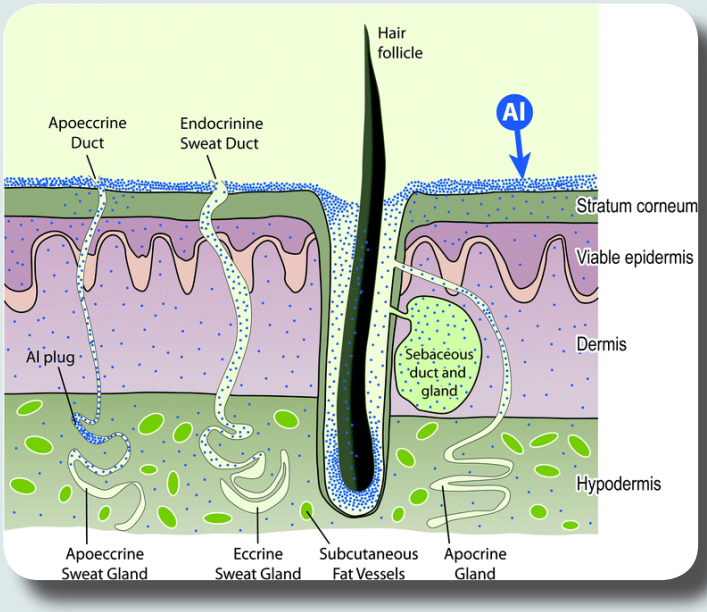


However, studies of acid rain's effects on biological life have shown that the earth possesses a natural remedy for aluminum toxicity: silicon. Silicon is the second most abundant element in the earth's crust (oxygen being the first). In an effort to prevent future mass fish kills, researchers at University of Stirling performed a study measuring aluminum toxicity to fish in waters with various levels of silicon present. Silicon molecules are able to bind with aluminum ions and render them innocuous, explaining why locations subject to acid rain that are naturally silicon rich are able to withstand the effects. This natural, plentiful element could hold the answer to combatting the dangers brought about by the Aluminum Age.

Aluminum in the Body

Think about objects around your house that you use on a daily basis. If you have toothpaste, body lotion, deodorant, nail polish, or shampoo, you are likely exposing yourself to aluminum every day…and that is just in the bathroom. The dramatic increase in aluminum used in consumer and industrial products means that everyone is exposed to more aluminum than at any other point in human history. It is indisputable, if not practically proven, that there is at least one atom of aluminum in every cell in every human being. The "body burden of aluminum" is an increase in aluminum atoms in our bodies that poses a threat to our health. However, very little funding has been applied to the negative health effects of aluminum.

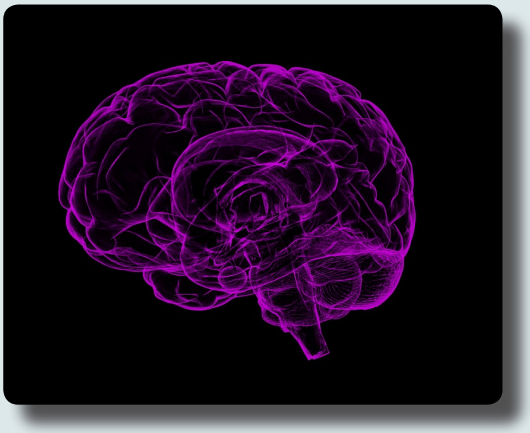
How Aluminum is Absorbed Through the Skin



"Imagine the immediate and short term economic consequences of human exposure to aluminum being directly linked as causal or even contributory in just one disease, such as Alzheimer's. The ensuing chaos and stock market crashes would be unpalatable but they would just be the beginning of a world which would now have to change to address and accommodate such knowledge. Should the tip of the iceberg become visible, the remainder would have to be investigated and the inevitable consequences of human exposure to aluminum would be revealed." – Chris Exley

By 2050, the amount of aluminum to which humans are exposed is expected to have increased by 100% since 1950.

Aluminum and Alzheimer's Disease



There is almost no dispute between scientists or industrialists that aluminum is an ecotoxicant and that aluminum has been responsible for deadly cases of dialysis encephalopathy in kidney patients. Although previously disputed, the role of human exposure to aluminum in diseases such as cancer, diabetes and neurological conditions such as Alzheimer's Disease is increasingly evident.

When aluminum loads exceed the body's excretory capacity, they form deposits and accumulate in tissues. Aluminum is believed by some to contribute to neurodegenerative conditions such as Alzheimer's by disrupting the blood-brain barrier and accumulating in brain tissue, causing inflammation and several other dangerous and deadly side effects.

Despite economic pressures to ignore the dangers of aluminum, a small number of independent researchers are forging ahead for answers. Recent studies at Keele University in England have shown that silicon dissolved in water in the form of silicic acid removes aluminum from the body much in the same way that it protects against acute aluminum toxicity in fish experiments. One study showed that consumption of silicon rich mineral water resulted in statistically significant improvements in cognitive function in 13 of the 15 Alzheimer's patients participating in the study. There also exists data that suggests that the lower incidence of Alzheimer's disease in Japan might be due to a higher content of silicic acid in their drinking water.

A silicon-rich mineral water is defined as one with at least 30 mg/L or ppm 'silica' and includes brands such as Fiji, Spritzer, and Volvic

Aluminum Adjuvants in Vaccines

Vaccines Containing Aluminum:

Diptheria-Tetanus-Pertussis (DTap, Tdap)

Haemophilus influenzae type b (Hib)

Hepatitis A (HepA)

Hepatitis B (HepB)

Human Papillomavirus (HPV)

Meningococcal (MenB)

Pneumococcal (PCV)

Not all aluminum in our bodies is acquired through environmental, topical, or ingested exposure. There is a more direct and insidious way aluminum is introduced in high quantities to the most vulnerable of the world's population. A significant amount—in the form of an aluminum adjuvant—is injected through mandatory childhood vaccines by age 18 months. Adjuvants stimulate the production of antibodies that will recognize the bits of antigen (i.e., the actual virus or disease) in the vaccine and produce a lasting immune response. Children continue to be exposed via booster shots and added vaccines, including HPV and Meningococcal B.

There are currently no clinically approved aluminum adjuvants, only clinically approved vaccines that contain aluminum adjuvants. These were first developed in 1937 despite a Federal Trade Commission hearing ten years earlier on the toxicity of salts of aluminum when injected subcutaneously or intravenously. Since then, studies have linked aluminum-containing vaccines to severe allergies, autoimmune diseases, and developmental disorders such as autism.

Yet, when vaccines are safety tested in the US, trials which use aluminum salts as adjuvants also use the aluminum adjuvant in the control or as the placebo, thereby masking any causal evidence of adverse effects from the aluminum salts. Instead of working for the public good by approving safe vaccines according to sound scientific practice and law, the FDA has absolved the vaccine industry of providing clear demonstration of the safety of and need for aluminum-containing adjuvants.

What Can You Do?

Despite clear dangers to the environment, wildlife, and humanity, "the Aluminum Age" shows no signs of slowing down. And without recognition of those dangers by the government and the aluminum industry-funded scientific community, it falls to each individual to protect themselves against a toxin that is rapidly contaminating the globe from the inside out. Here are a few ways you can reduce aluminum in your own life:

TOP TEN WAYS TO REDUCE ALUMINUM IN YOUR LIFE

1. Drink silicon-rich mineral waters, as they have been shown to facilitate the removal of aluminum from the body.
FIJI and Volvic brand bottled waters are rich sources of silicon.

2. Avoid or space out injections of vaccines that contain aluminum.
Aluminum adjuvants in vaccines have been shown to cross the blood-brain barrier and research has confirmed links to autoimmune diseases in prone individuals.

3. Do not use aluminum pans for cooking.
Good alternatives include glass dishes and covers for baking, stoneware for cookie sheets and cast-iron for stove-top cooking.

4. Avoid aluminum foil for cooking.
Aluminum has been shown to leach from foil, particularly when cooking highly acidic foods.

5. Only use aluminum-free natural deodorants.
Avoid aluminum compounds like aluminum chloride that alter sweat-producing cells, and aluminum zirconium octachlorohydrex that obstruct pores in the skin to prevent sweat from leaving the body.

6. Do not consume drinks that contain dyes (e.g., colored sports drinks).
Dyes contain aluminum compounds called "color lakes," which contain metal salts such as aluminum.

7. Avoid skincare products with emollients containing any of these ingredients:
magnesium aluminum silicate; aluminum tristearate (a thickening agent that prevents liquid makeup from separating or becoming runny); and aluminum stearate (a colorant and emulsifier in cosmetics).

8. Avoid store-bought infant formulas (all of which contain aluminum)
A recipe for homemade, aluminum-free baby formula can be found at:
http://www.westonaprice.org/childrens-health/formula-homemade-baby-formula/.

9. Avoid antacids that contain aluminum compounds.
Try replacing chalky aluminum-containing tablets with water and apple cider vinegar to reduce heartburn.

10. Look for aluminum-free alternatives for haircare products, toothpastes, body soaps, sunscreens, nail polishes and buffered aspirins.

CMSRI Children's Medical Safety Research Institute

Our goal at CMSRI is to help
fund independent research
and educational programs to end
today's epidemic of chronic illness
and autoimmune disorders.
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