



# ***Elemental Birthdays:*** ***How to bring Science into Every Party*** **Jon & Heather Cleland-Host**

## ***Why celebrate Elemental Birthdays?***

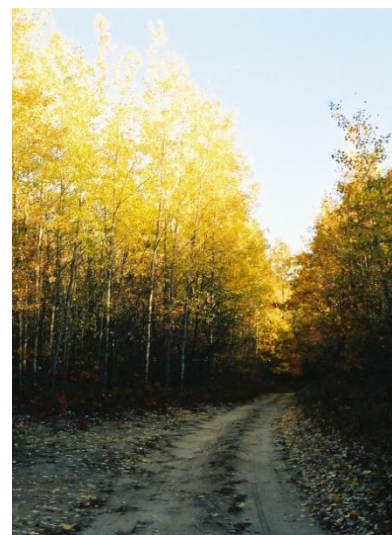
### **Science is an Essential part of Childhood**

We live in a world surrounded by the products of science, and yet for most of us, science is somewhat mysterious. It does not start out that way. Young children are natural scientists observing and testing their environments in ways that feed parental stories of what one year old Ellie ate off the ground yesterday. A child's curiosity is one of the key components of science exploration, but somehow that gets lost between preschool and adulthood. As with languages, which are easily learned as young children, but very difficult for adults, science is much harder when it has not been part of a child's world from the beginning. Science becomes a foreign language – incomprehensible and daunting to understand. Science does not need to be mysterious though. If we can bring science into the everyday awareness of our children, we could give them with a fluency in science that would open a whole new world. This book was inspired by this desire to bring science into every child's world at a very young age, to make science everyday.

### **The Journey to Elemental Birthdays**

Once upon a time, as young parents, Jon and I would sometimes go driving with our three young sons. We would wander and explore roads we had not traveled. We had had many discussions about how to incorporate more science into the lives of our kids, especially how to do so in a fun way. We had a dream of having science be part of every day for our kids.

One particular day, while driving down a dirt road, it struck Jon that the elements ran from an atomic number of 1 to somewhere around 100, each with its own unique features, just like birthdays. What if we commemorated that connection on each birthday? This idea bloomed into an excited discussion between us. We began exploring how it might work.



## How Elemental Birthdays teach Science

Our family celebrated our first elemental birthday on Heather's 36<sup>th</sup> year: her krypton birthday. We had fun making Superman jokes and doing fireworks. We decorated a cake with a krypton symbol alongside the "Happy Birthday." From then on, we celebrated every birthday with its element. We had fun exploring different ways to incorporate the elements into parties. As our sons grew older, they began to join in on the party planning and would research their element and add their own ideas.



Figure 1- the first Elemental Birthday party (Carbon Z=6)

When a grandparent had a birthday, we would find their element on the periodic table. On the birth of our fourth son Connor, we even included neutronium (the "0<sup>th</sup> element") as part of welcoming him into the world.

It transformed our family birthdays from just another party with cake and ice cream to an elemental celebration of life. The elements have provided meaningful themes to the parties or flavored themes chosen by our children. To our delight, we found that the value of Elemental Birthdays went beyond our children. Non-scientist friends and relatives sometimes seek to know what their element is for their coming birthday. Everyone learns the elements in a fun and very memorable way.

Excitingly, the celebration of the elements has taken our children beyond the simple value of learning the elements. Elemental Birthdays incredibly allows kids to see and experience the elements of the periodic table years before seeing them in high school chemistry, but also it encourages all science learning, because learning about an element often involves so many other areas of science. When our oldest son Kaedon was nine, he told us how neat it was that he "knew stuff" before it came up in class. Science is familiar and fun, not scary. This makes the additional science topics more accessible too, because they already see science as cool and easy to learn. Electricity, earth science, biology, and so on – it all becomes part of the desire to "learn about how our world works," and they already know the building blocks that underlie it all. Regardless of whether one actually goes into a scientific field as a career, basic science literacy makes our world a more wonderful home. Elemental Birthdays open that door to your child.

## How Elemental Birthdays Celebrate Life

While excelling in school is important, we realized that there has been another payoff from Elemental Birthdays. Birthdays are no longer just a string of generic parties; each is more clearly the celebration of a mile marker of a life being lived. This hit us most when our second child Adair reached his carbon ( $Z=6$ ) birthday. He said, “Hey, I remember Kaedon’s carbon birthday – I’m just like he was!” Such an obvious fact, yet it was clear that kids might not realize it so clearly without Elemental Birthdays. How many of us can recall a specific birthday of a sibling and match the year with the party?



Figure 2 - When is a sun balloon more than a sun balloon? When it is a Helium Birthday Balloon!

Without the thematic connection to the actual year lived, each birthday celebration is little different from another: just a string of cakes, games, and gifts. The kids saw, with every birthday, that each of us goes through this same series of

birthdays. And, we could further point out to them on a periodic chart that later in the year were Daddy’s zirconium ( $Z=40$ ) birthday, and Grandma’s tungsten ( $Z=74$ ) birthday. They could see – in a real way – that we are all living lives through the same stages, that Daddy and Grandma were once just kids like them. While this is trivial to us, it’s something that is a major realization as a child grows and learns about how the world works.

## Elemental Birthdays Take Us On A Journey

Perhaps the most valuable gift of elemental birthdays has been how the child sees their world. Their concept of what is possible widens with each new experiment, each new piece of the puzzle of our world to fall into place. Through fun experiments and learning which elements make up all the things around them (nearly all the things in our daily lives are made up of the first 20 elements + a few transition elements), they grow to see the world differently. In at least this one way, the world becomes knowable and familiar.

They learn to see the air not merely as an invisible gas that they breathe, but as a mixture of elements: nitrogen, oxygen, etc. The world quickly changes from a confusing to understandable arrangements of familiar and fun building blocks. By learning that all these atoms are recycled from one form to another, they see one way in which the world is interconnected, and how they themselves are connected and a part of our world. They learn that with every breath, they breathe in the same oxygen

atoms that people the world over have breathed, that also fed a fire that kept their ancient Ancestors warm, that made up the body of a Tyrannosaurus Rex, and earlier still, that were exhaled by the first photosynthetic bacteria.

## **Let *Elemental Birthdays* Take You on a Journey!**

Similar grand journeys through space and time are made visible for all of the elements, when seen with deep time eyes. Each element plays roles that are repeated again and again around the world and across time and space. The similarity of these roles reinforces the order of our universe, while their variation reminds the child of the flexibility of chemistry and technological innovation. *Elemental Birthdays* give the child, and also the adult, eyes of wonder and knowledge that they can use their entire lives. We hope that *Elemental Birthdays* brings into the lives of you and your children the appreciation and excitement about science that it has brought into our lives.



*There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle. – Albert Einstein*

Wishing you an Elementally Fantastic day,

Jon & Heather Cleland-Host