

What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



5E LESSONS

Two-week lessons with over 100 topics



ESCAPE ROOMS

Engaging activities for review



INQUIRY LABS

Three different levels to fit every student



AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



SUB PLANS

Never worry about planning for a sub again.



WARM-UPS

Bellringers for the entire year



STATION LABS

Student-led exploration



INTERACTIVE NOTEBOOKS

Bring science journals to life.



WIKI TICKETS

Quick formative assessments



STEM CHALLENGES

Real-world STEM problem-solving



GRAPHING

Table and charts and graphs ... OH MY!



SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



WRITING PROMPTS

Writing activities covering 100+ topics

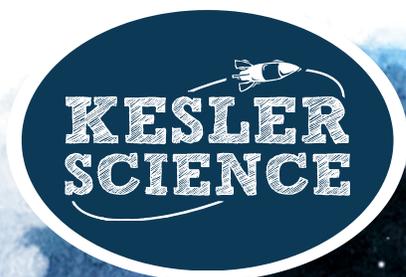


EXPLORIES

Story-driven units with integrated activities



The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



Surprising Elements Found in the Body

Let's start with this question: what are elements that you know for sure are found in our bodies?

☺ Living things like humans are "organic", so carbon is probably a good choice. We breathe in oxygen. Our bodies are largely composed of water, so hydrogen must be in the mix too.

But what if I told you that scientists are learning about the importance of chromium in a healthy body metabolism? Would you be surprised to hear that cobalt was classified as an "essential mineral" by the Food and Drug Administration? And those aren't even the most surprising elements I found to be in our bodies. 🤖

It's important to distinguish between essential elements and trace elements. Humans are made up almost entirely of oxygen, carbon, hydrogen, nitrogen, calcium and phosphorous. They compose 99% of our body by mass. Next comes a class of elements that are essential for life but found in much smaller quantities. These include potassium, sulfur, sodium, chlorine, and magnesium.

If you massed out all of the trace elements found in our body, like chromium and cobalt, it would make up less than 0.15% of our body weight. Scientists measure their amounts using extremely small units. Before revealing some elements in our body that you wouldn't expect to find, here are important things to know about trace elements:

The amount matters

When we read the nutrition labels on our food, we might be keeping an eye out for grams of protein, fat, or sugar we are consuming. Groups like the National Institutes of Health make recommendations for trace elements using micrograms. One gram is made of a million micrograms.

We also want to be careful not to exceed the "tolerable upper intake level" of these unusual minerals. This level tells us the amount we can ingest before it is toxic for our bodies.

The type of trace element matters

Most trace elements are taken in through our diet. Cobalt is found in organ meats, seafood, and vegetables, for example. But industrial workers who are exposed to the metal in their environment are at risk for cancer if cobalt dust accumulates in their organs.

Similarly, chromium plays an important role in maintaining healthy blood sugar levels. If a person absorbs chromium ions with a +6 charge instead of a +3 charge, however, the results could also be harmful.

There are also trace elements in our bodies that we aren't sure if we need them. We absorb them from our food and the environment, but so far, we can't see any benefit to having them in our bodies.

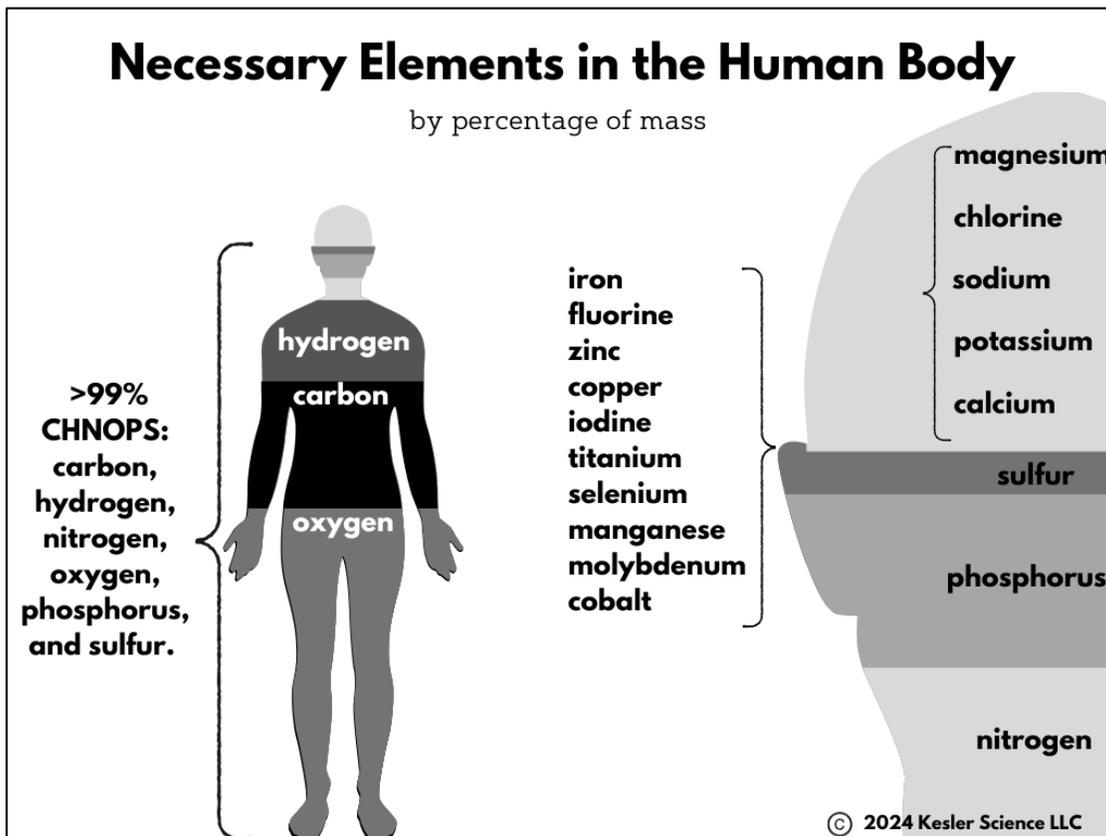
There's a lot we still don't understand

Scientists have a pretty good idea of some of the jobs trace elements have in the human body. Many functions are still a mystery, though. This raises the question - are all of the trace elements found in our body meant to do something, or were we simply exposed to them through our food and environment?

Here's a table on surprising trace elements we need to live, their known functions, and their typical uses in industry.

Trace Element	Functions in the Body	Industrial Uses
cobalt	Helps make red blood cells, assists in the release of energy from food.	Batteries, magnets, and high-temperature metals used in jet turbines.
chromium	Assists insulin receptors in the body, helps produce cholesterol and fatty acids for brain health.	Metal plating to create a shiny finish, glass, heat-resistant materials.
molybdenum	Helps break down toxins in the body and old DNA fragments the body no longer needs.	Additive to make steel stronger, industrial lubricant and paint pigment.
selenium	Helps form DNA and protects cells against damage from free radicals.	Used in solar cells, paint pigment, and glass production.

Here's an interesting graphic that shows how amounts of essential trace elements in our body stack up:



1. Which element is needed in the highest abundance?

2. Which trace elements are needed in tiny amounts by the human body?

3. Based on the information from the graph, why do you think it's a good idea to have a varied, diverse diet?

Surprising Elements Found in the Body

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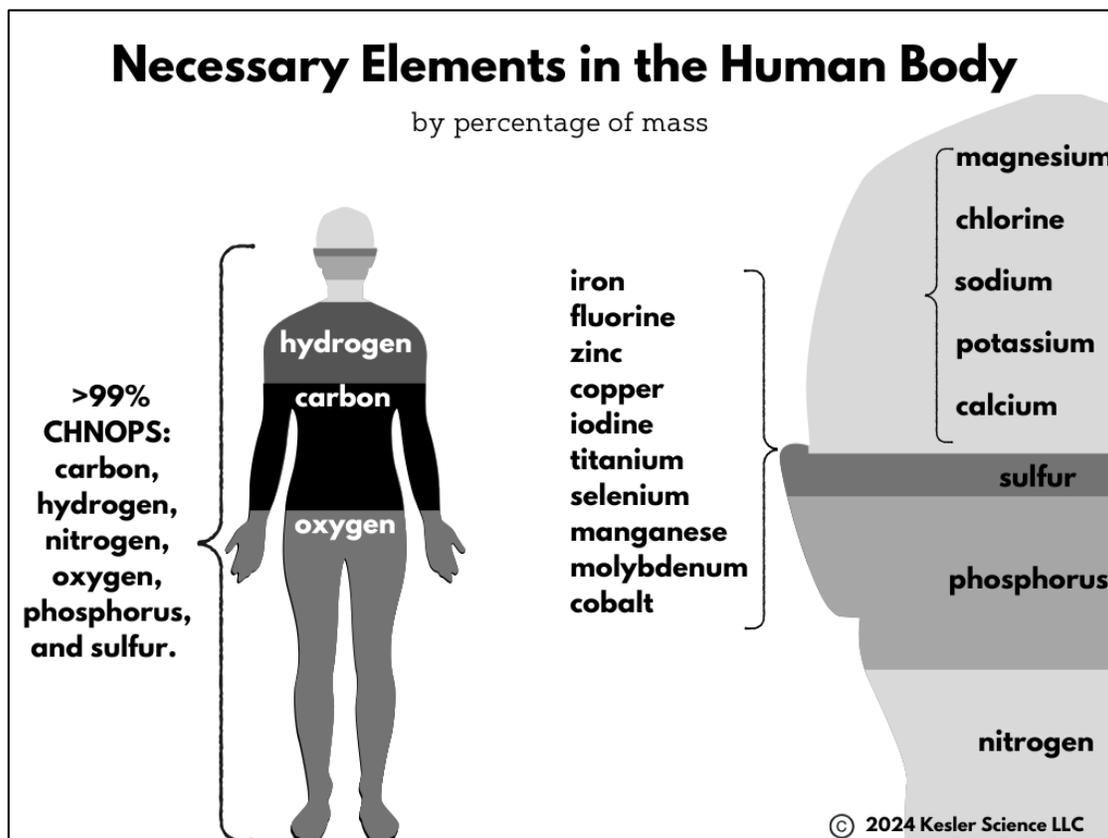
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1. Which element is needed in the highest abundance?

Oxygen tops the list!

2. Which trace elements are needed in tiny amounts by the human body?

Iron, fluorine, zinc, copper, iodine, titanium, selenium, manganese, molybdenum, and cobalt.

3. Based on the information from the graph, why do you think it's a good idea to have a varied, diverse diet?

Almost all elements built into our bodies come from our food. We need a wide range of elements, so it's important to eat lots of different foods that might contain those ingredients.