

CHEMISTRY MIXTURES

THE ULTIMATE GUIDE

**"EVERYTHING IS THEORETICALLY IMPOSSIBLE,
UNTIL IT IS DONE"**

-Robert A. Heinlein



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INTRODUCTION

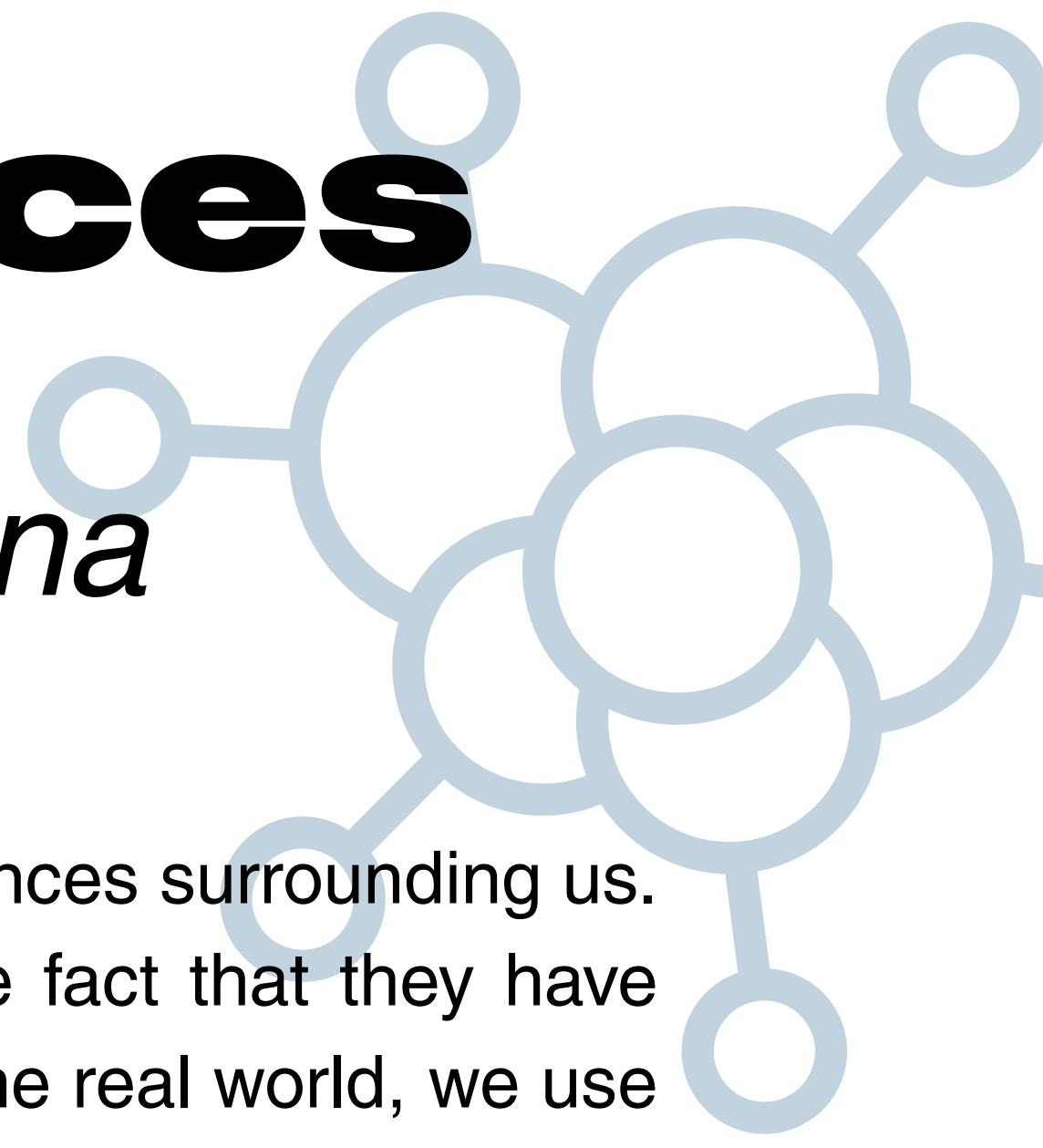
Nicolás Medina

In the last month, we have been working on a combination of subjects named LED which stands for Learning Experiences through Discovery, in which we learned about the history of chemistry and how different “genius” people made the advancements that now lead humanity. When we were clarified in the topic, then we started creating a magazine in which we included entire texts of a specific scientist. We made the incredible effort of building a poem about an element. Also we read a book about the elements “The mystery of the periodic table”. We did some grammar exercises that helped us write our texts in a better and more complete way.

During the construction of this magazine, we had different researches about the types of mixtures and advances in chemistry in the long book of history of the world. After facing challenges in the group, trying to do our best in time management, the ideas came to our group and together we built our final product. Throughout this project we have developed the ability of teamwork and we’ve suggested what these learnings and discoveries should be used for. In this magazine we have also included some previous knowledge and experience of previous projects. This project was the only one that did not have the theme of environmental issues or how to fix our planet, but learning about how to lead humanity to a better future. Hope you enjoy our series magazines and learn something new about the world of chemistry .

ARTICLE TEXTS

Substances

A decorative graphic in the top right corner consisting of several light blue circles of varying sizes connected by thin lines, resembling a molecular structure or a network diagram.

Nicolás Medina

In our world , there are mixtures and substances surrounding us. When it is about the different mixtures, the fact that they have different characteristics is always there. In the real world, we use mixtures all the time. The salt that people eat is a mixture between chlorine and sodium. Also they have different properties of matter, which help to clasifícate the different types of matter. When people have a big knowledge about matter and mixtures, they can find a utility for mixtures in day to day life. In this text, information will be provided for some answers to the question “how do properties in a mixture affect the way they combine? And based on that, utility for mixtures may be clearer. Substances change their chemical properties when mixed with other substances.

A reaction can not occur without the particles of each substance having contact. That’s why when vinegar and baking soda are mixed they create a reaction, because vinegar is acid. Electrons also have to do something with mixtures. In an atom there are different parts. The valence shell, the nucleus, and more, but what mostly is affected in a mixture is the valence shell. If one substance has more electrons in its valence shell than the other substance, then the one with more electrons takes them all from the other atom, which means that it would be negatively charged and the one left with none electrons becomes positively charged. When this process happens it is called an Ionic bond.

On the other hand, if they have almost the same quantity of electrons and one does not get any electrons, the electrons are shared between atoms and it is called a covalent bond. To make these procedures faster in some mixtures, scientists have a substance called a catalyst that may change the temperature, the pressure or more reactions that fasten the reaction. Always, mixtures have a physical property that can be found without any chemical decomposition nor measurement. Ways of altering these properties have been created and it is easier than people think.

Even the temperature changes the properties! When the temperature is decreased, it is solid. If it increases a lot, vapor it is. It is important to add that two substances don't create a reaction until their molecules have contact. As an example, when adding baking soda and vinegar, an explosion of CO_2 and other components occur besides, the two substances create an eruption. Reaction rate is the measurement of the change of concentration between the reactants. The physical state of the reaction also matters because they determine the area where the reaction is going to take place. The particle size is also a way that mixtures may be affected because they determine how fast the reaction is and the flowability of the substance. Meanwhile, it can also determine if there's going to be segregation in the substance. The particles and components in substances help to mix or separate. Well, the particles in a mixture work really similar. If a method is applied, the particles can be separated. As an example, it is a centrifugal force. This is used to put the two substances or the mixture to spin at a high speed and this process assures that the heaviest liquid goes to the bottom of the surface and the less dense liquid goes to the surface. When this method is used in water and oil, oil would be on top, but not because it is lighter.

It is because it has less but larger particles and makes it less dense. So it will always float over the water. On the other hand, scientists also purify liquids and create electricity from the fast movement of centrifugal force. Other method is evaporation. When evaporation is used they are separating the volatile from the non-volatile component. When talking about volatile components it means it evaporates at 100 degrees or less and the non-volatile is above 100. These different methods are actually separating the particles but it is also changing the physical and chemical way of the mixture. When sodium is separated as an example from Gatorade, then it'll taste different, and it won't be as hydrating for the body.

If a mixture has a component that shouldn't be there, an awkward reaction is going to occur. So it is important to be careful and know what substances are being mixed. In our daily life, we use mixtures every time. In our food, in the medicines, between others. While reading these texts knowledge was acquired about the atomic composition of substances and how to use different methods to separate the substances. In the future, knowledge from mixtures may be helpful to experiment with new things. Perhaps this could also be used to cure illnesses. In Synthesis, knowing and being aware that mixtures are all around us may be important and could help us in a close future.

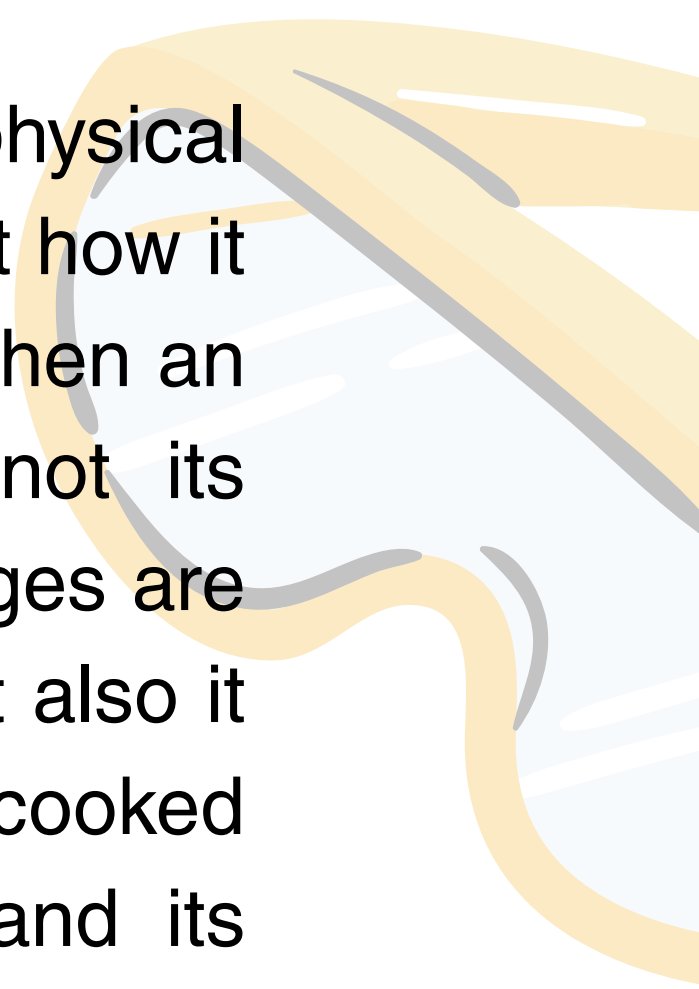


The Science of Mixing: How Substance Properties Shape Every Mixture

María Alejandra Herrera

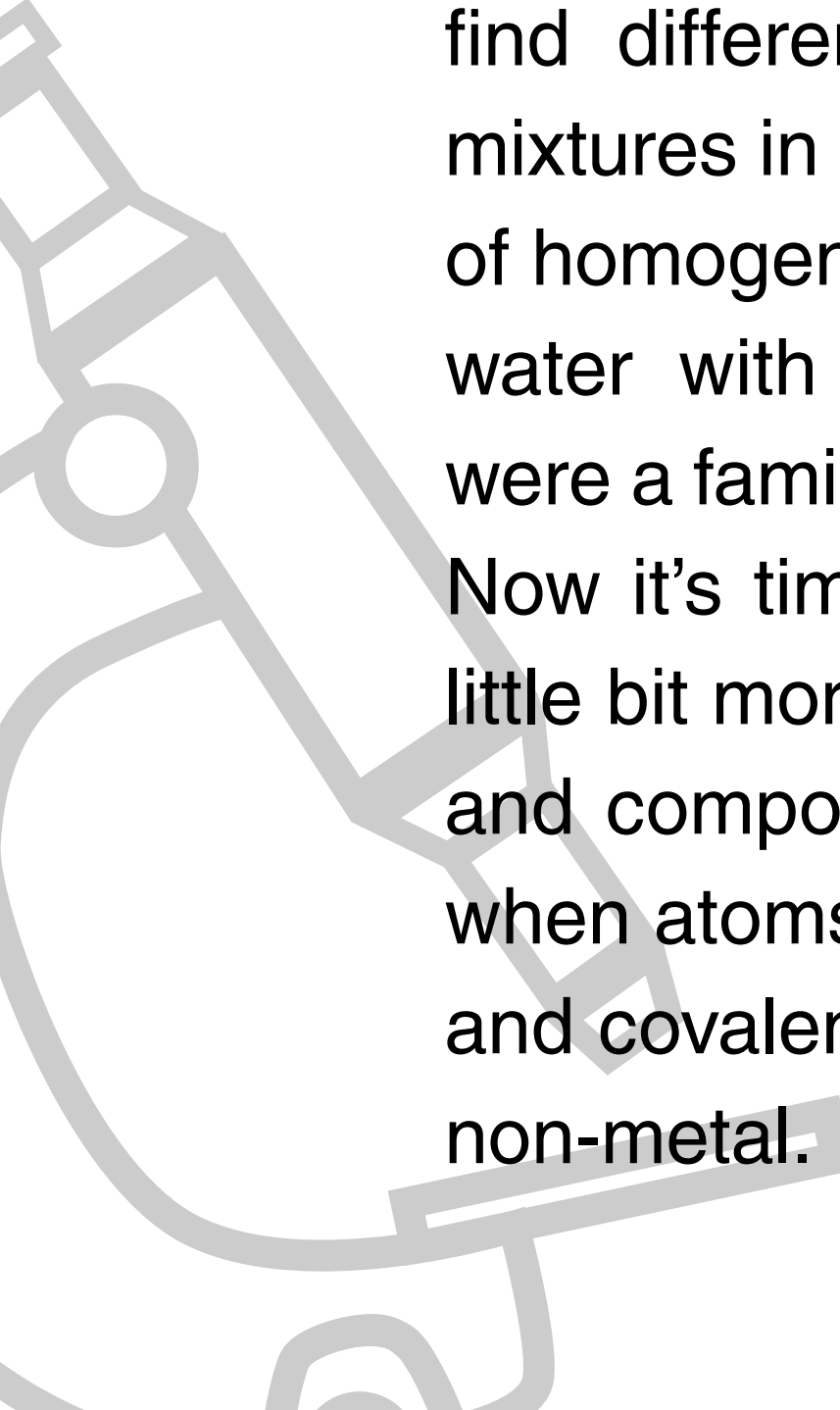
Did you know how the properties of the substances in a mixture affect how they combine? I really want that in this article people understand this big topic and the subtopics that this has. First mixtures are present in our everyday life, sometimes we can see them, sometimes we can't. I think that this topic more than important is something that is interesting too because when I just started to investigate, I found a lot of information and facts about the topic of properties of substances, characteristics of mixtures and bondings and compounds. For example, when I found information about properties of substances I was really impressed that the topic was divided into two parts (physical and chemical), also know that those two parts was related to the changes of the materials in different circumstances I think more people need to know this it's so important and I can help writing in a whole think, that was the article with that topic and the question of How do the properties of the substances in a mixture affect how they combine?

Do you know what the properties of substances are? Do you think that they are easy to understand? What happens if I tell you that I can explain you in one paragraph? I know that when we talk about things like chemistry or words, that sounds too strange like properties of substances. Let me start with the fact that properties of substances are the different characteristics that we can give to describe what type of changes a thing has in any situation, properties of substances are divided in two categories (physical and chemical) and they let us describe a substance or material. These ones are too easy to understand and yes I can explain it in one paragraph.



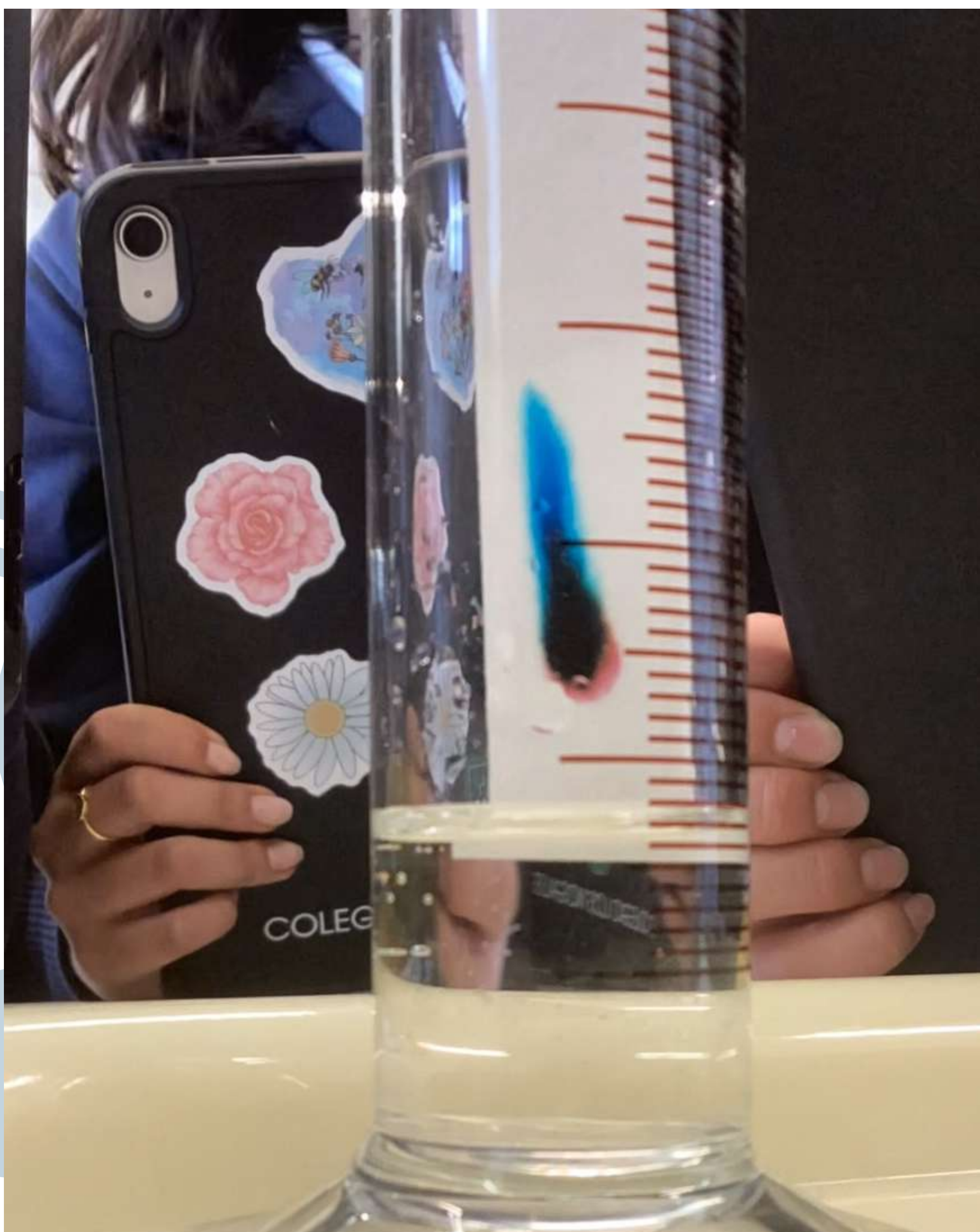
To describe properties of substances let's start with the physical ones, physical changes are when a material changes just how it looks but doesn't change its composition, for example, when an ice melts and only its physical state changes but not its composition since it is still water. And the chemical changes are the ones when one material changes its composition but also it can change how it looks, for example, meat when it is cooked and its composition changes, since it has no water and its appearance, since the color changes. To make that things change we need something like heat or oxygen to change it like metals, when any metal because the oxygen rusts, this changes the composition of metal because oxygen mixes with metal atoms.

When we talk about properties of substances it's important to make sure that you understand what mixtures (substances) are but also what their characteristics are. First a mixture is the combination between two or more pure substances and their characteristics is that they can be homogeneous and heterogeneous mixtures. Let's start with homogeneous ones, a homogeneous mixture is when the substances that make the mixture are completely dissolved and they can't be easily identified. On the other hand, heterogeneous mixtures are the one in which their substances can be easily identified. We can find different examples of homogeneous and heterogeneous mixtures in our life, for example salt and water is a good example of homogeneous and one example of heterogeneous mixtures is water with oil. Words like homogeneous and heterogeneous were a familiar sound in chemistry and in math.

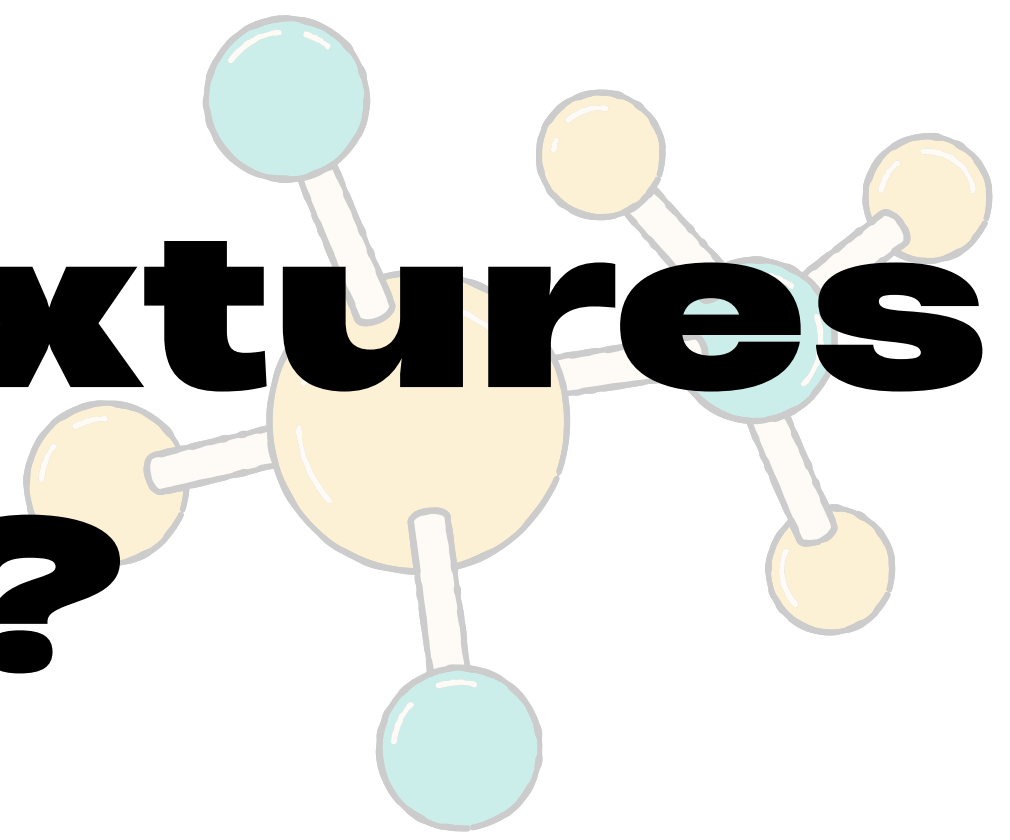


Now it's time to talk about another important subtopic that 's a little bit more confusing but let's learn about it. What are bonding and compound? How does chemistry define them? Bonding is when atoms of the elements are sheared, there was ionic bonds and covalent bonds, an ionic bond occur between a metal and a non-metal.

An ionic bond results when electrons from a metal transfer to a non-metal, atoms that gain electrons make negatively charged ions (called anions), atoms that lose electrons make positively charged ions (called cations). Now compounds, compounds are chemical substances made up of two or more elements that are chemically bound together in a fixed ratio. These ones are represented by their chemical formula, there are two types of compounds, molecular compounds and salts compounds.



How do mixtures work?

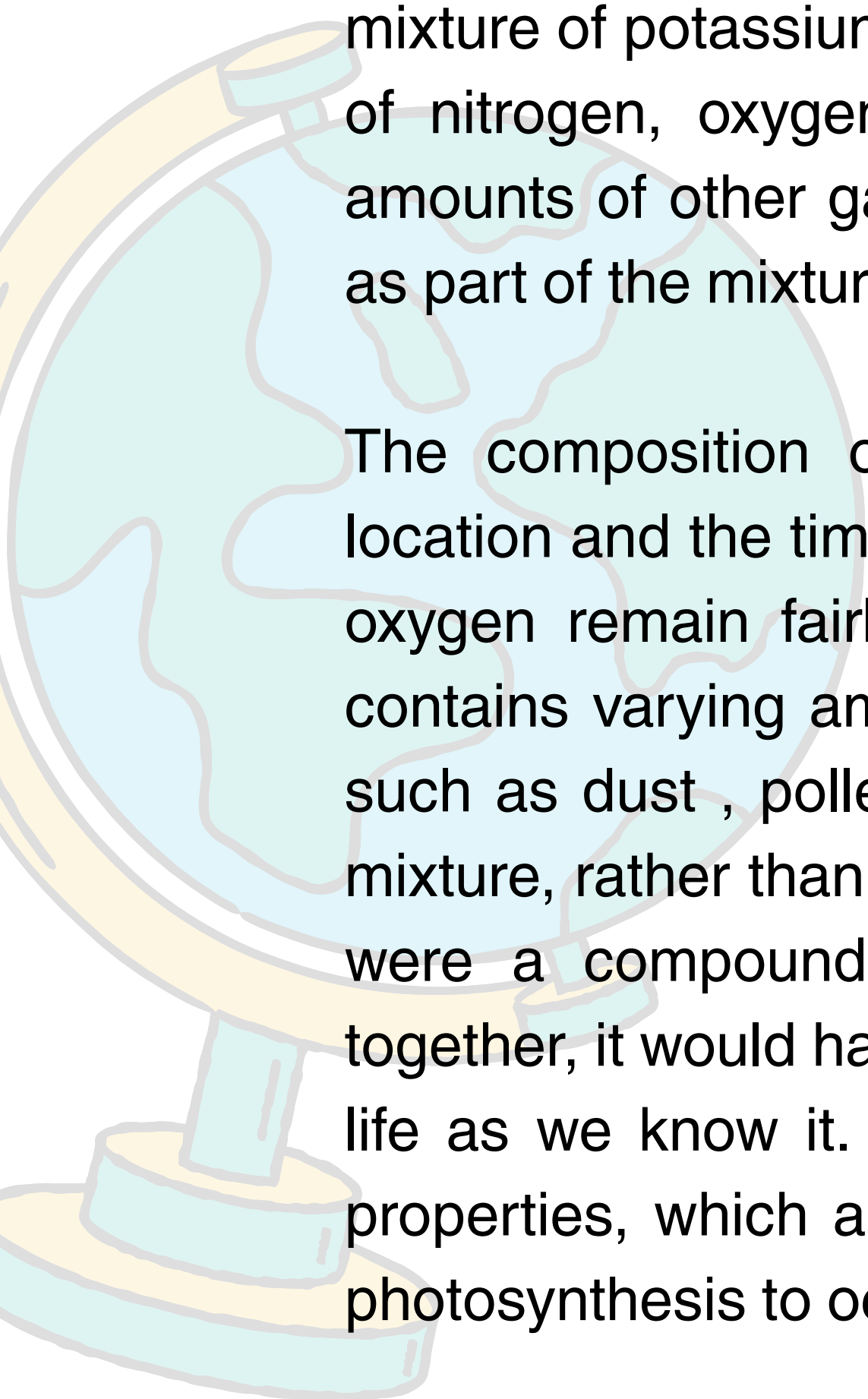


Nicolás Bohórquez

Have you ever wondered what is in all the things you can see and hold in your hands? Today, we will discuss some topics that can entertain us. The topics we will cover include mixtures, properties, and characteristics. But why are these topics important in our lives? They are important because, even if we don't always realize it, we are surrounded by mixtures and other topics I have mentioned. Understanding these topics will help you grasp science better. If you want to know more, you should stay and read this article.

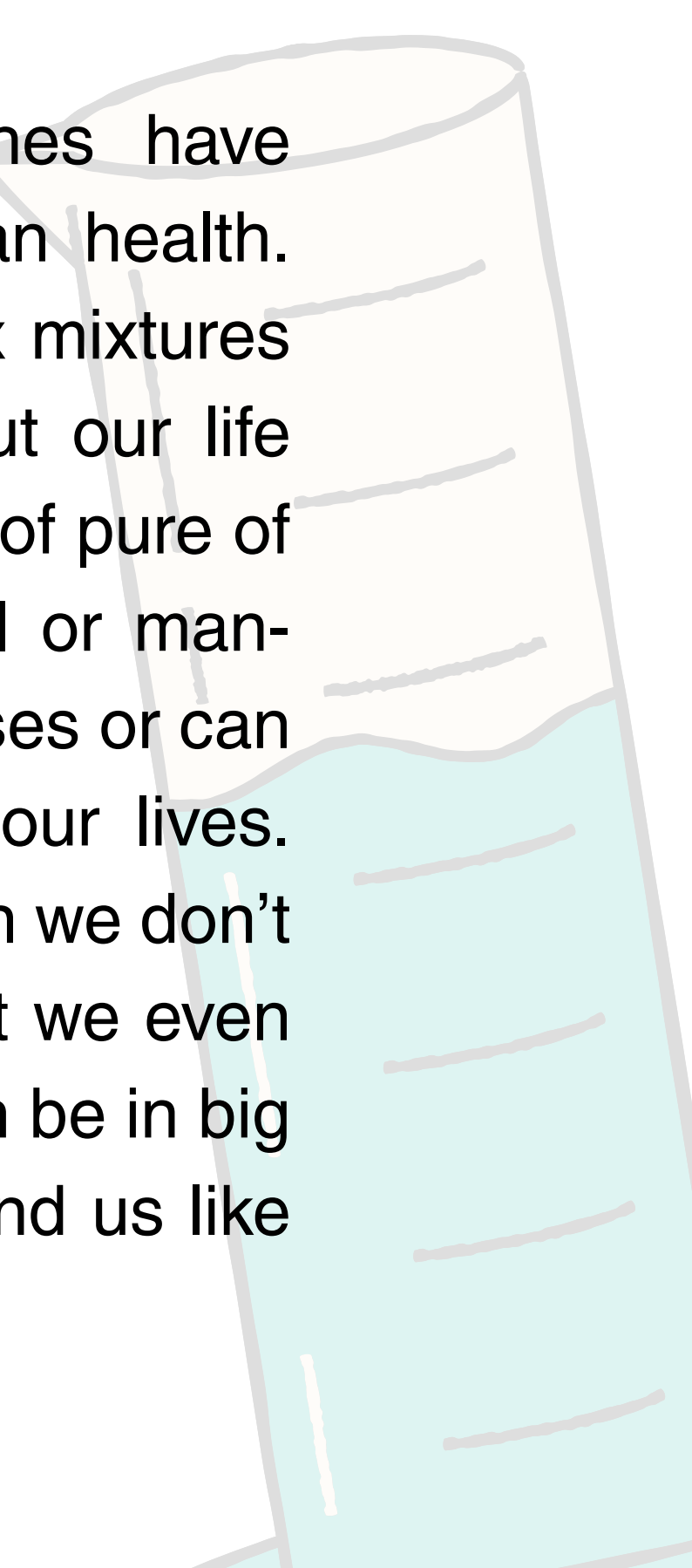
A mixture is something people encounter in their daily lives. It is the combination of two or more substances that are not chemically bonded. A mixture contains atoms or molecules that don't react chemically but are physically combined. Mixtures and compounds can be identified by several characteristics. For example, they can retain their individual identities while being mixed to form solutions, suspensions, or colloids. The different components of any combination do not undergo chemical changes. As a result, the components maintain their distinct characteristics. Mixtures can be both homogeneous and heterogeneous.

Mixtures are all around you from the things you hold in your hand to the bed where you sleep and everything else. Here are some common mixtures that you may encounter regularly: Sea water: a mixture of water and various salts. Crude oil: a mixture of organic compounds, mainly hydrocarbons. Gasoline: a mixture of light hydrocarbons and performance additives. Gunpowder: a mixture of potassium nitrate, sulfur, and carbon. Dry air: a mixture of nitrogen, oxygen, argon, carbon dioxide, neon, and trace amounts of other gases. Air normally also contains water vapor as part of the mixture.

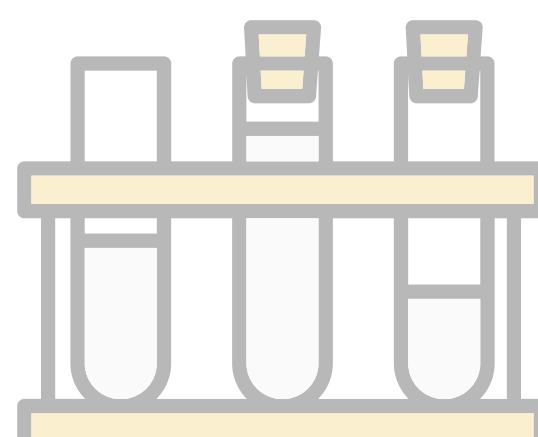
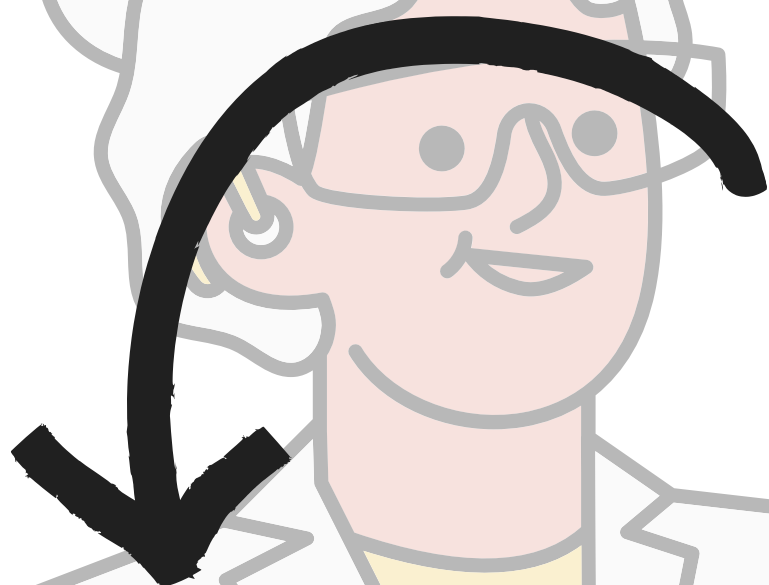


The composition of air can vary slightly depending on the location and the time of year, but the proportions of nitrogen and oxygen remain fairly constant. In addition to gases, air also contains varying amounts of water vapor, and particles matter such as dust, pollen and other pollutants. The fact that air is a mixture, rather than a compound, is crucial for life on Earth. If air were a compound, with its components chemically bonded together, it would have different properties and would not support life as we know it. The individual gases in air retain their own properties, which allows for processes such as respiration and photosynthesis to occur.

For decades, toxicology and regulatory approaches have focused on the effects of single chemicals on human health. Scientists recognize that we are exposed to complex mixtures of environmental chemicals every day and throughout our life times. Mixtures are constituted by more than one kind of pure matter. Compounds and mixtures may be both natural or man-made. The compounds can be made by nature processes or can be man-made. Mixtures are a ubiquitous part of our lives. Normally they are mixtures that can affect us even when we don't think. Some examples of this argument are some that we even don't consider that are there and when we now you can be in big problems in health. If we don't play with this all around us like ecosystems, environment etc be affected.



This is due, among other factors, to the current approach to evaluating the potential hazards from chemicals being based on a relatively small number of individual components. you all ready know more things about how to be careful with things that you do and more . In conclusion, mixtures are fundamental in diverse fields such as chemistry, industry, and everyday life. Understanding and manipulating them allows for the development of technologies, products, and processes essential to society. Studying how they affect our lives is key to sustainable and efficient innovation.

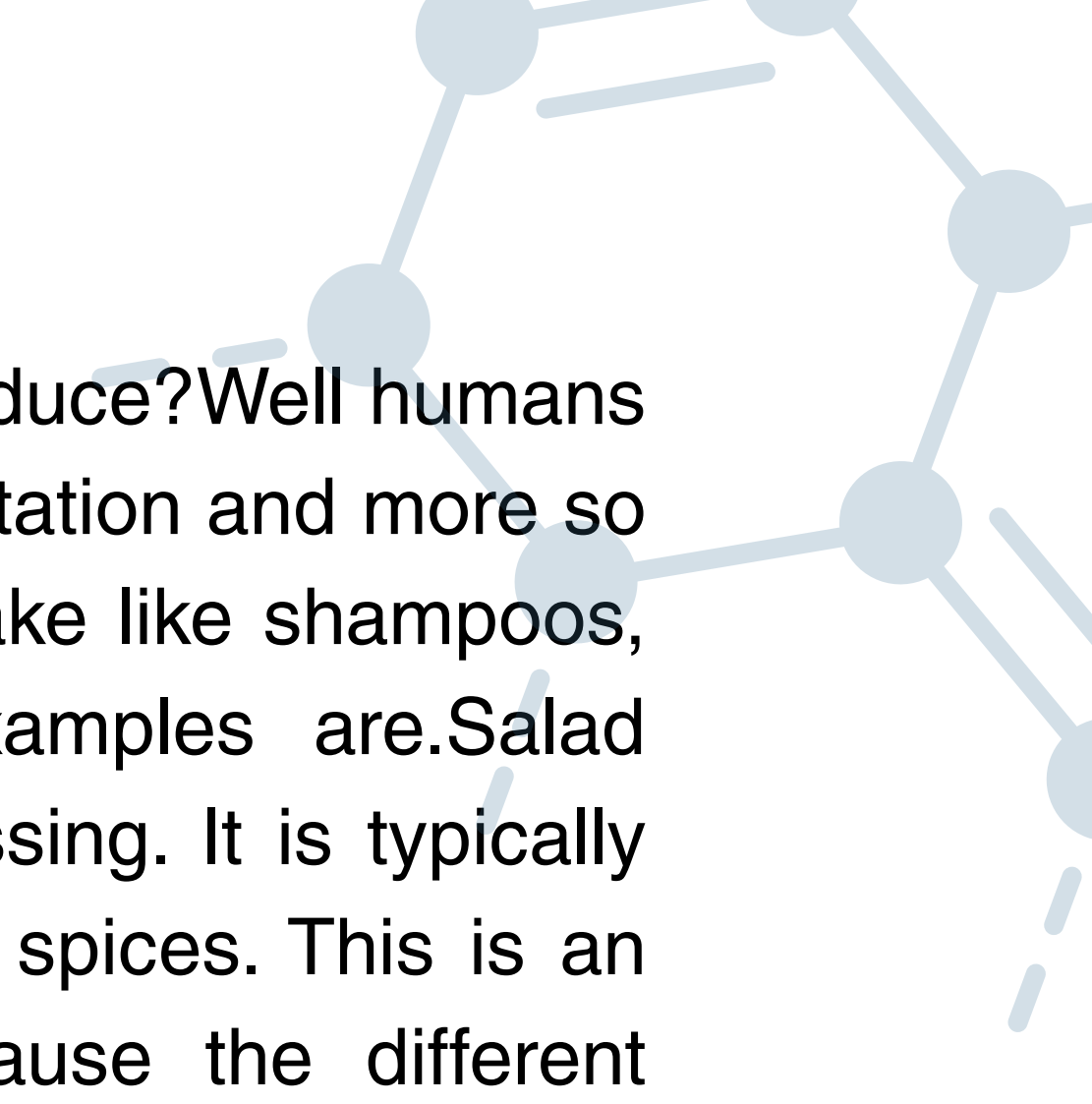


Understanding mixtures

Luciana Marin

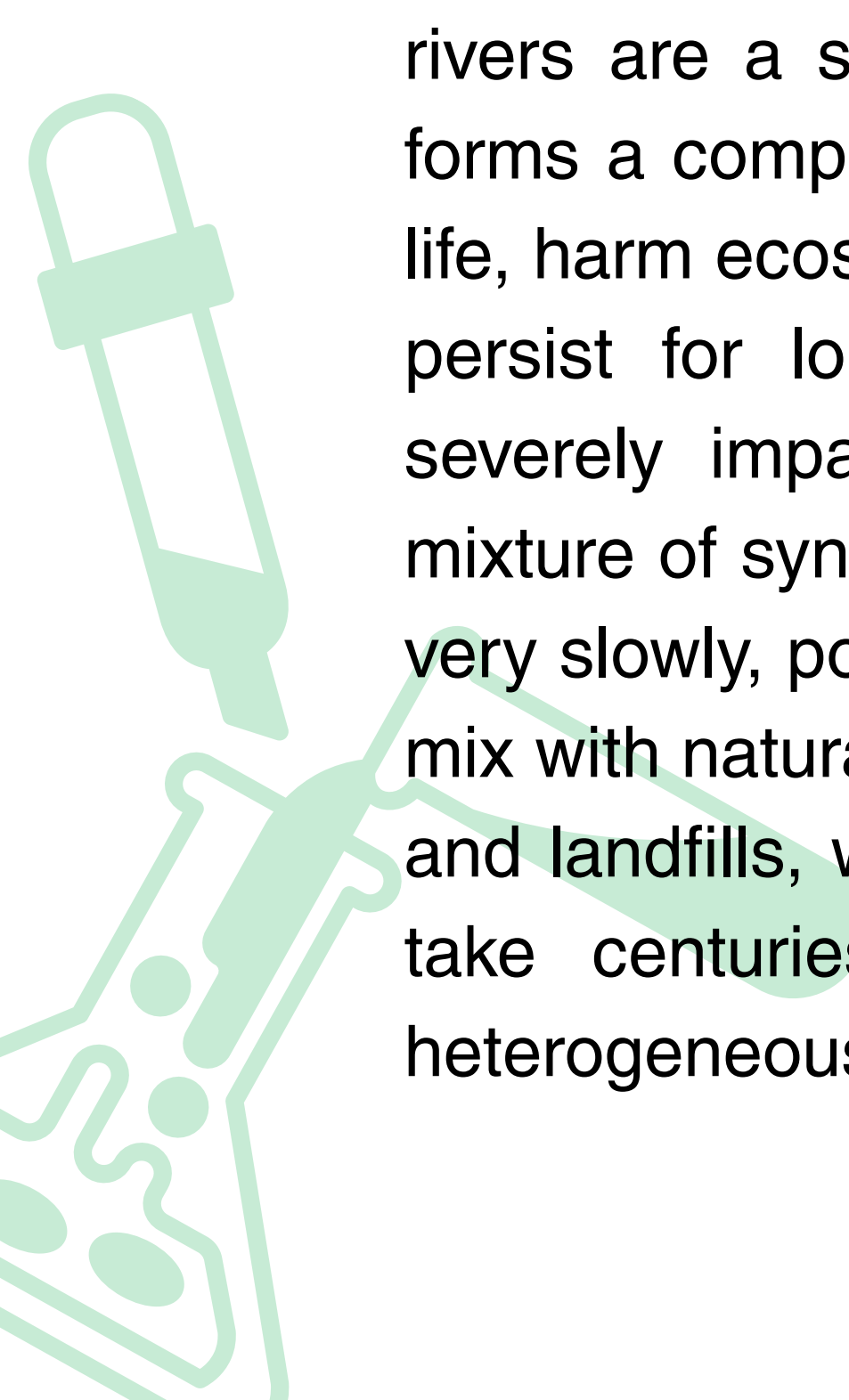
In this article you will learn about mixtures but also respond to What are some common everyday mixtures, and how do they affect us? In this article you will read about three different topics that will be explained with a more detailed information. These topics are: The mixtures What mixtures do we find in our daily lives? What mixtures have a greater impact on the environment? You will have a bigger understanding of the mixtures and all of what it is related to and will see all mixtures in your house and identify where there are Heterogeneous Mixtures or Homogeneous Mixtures. What is a mixture and what types of mixtures are? So to respond to that question you will need to know what a mixture is and the different mixtures that exist. So first a mixture is a combination of two or more substances in which they keep their individual properties and need chemical changes to be formed. This is a clear and short explanation of what a mixture is and how it is formed.

Now do you know what types of mixtures are and what they are. The first type of mixture is heterogeneous mixtures. They are when you mix some stuff together but you can separate them like salad or sand with water. Still you can separate the two items from each other, so that is a heterogeneous mixture. Then and for last it is the homogeneous mixture. It is when the particles are well distributed and you can separate them. For example when you do a cake and mix all ingredients you can't separate them apart so that is a homogeneous mixture. What mixtures do humans find in their daily lives? Well there are two different kinds, one of them is the one that is created from nature and the other one is the one that we like humans produce.

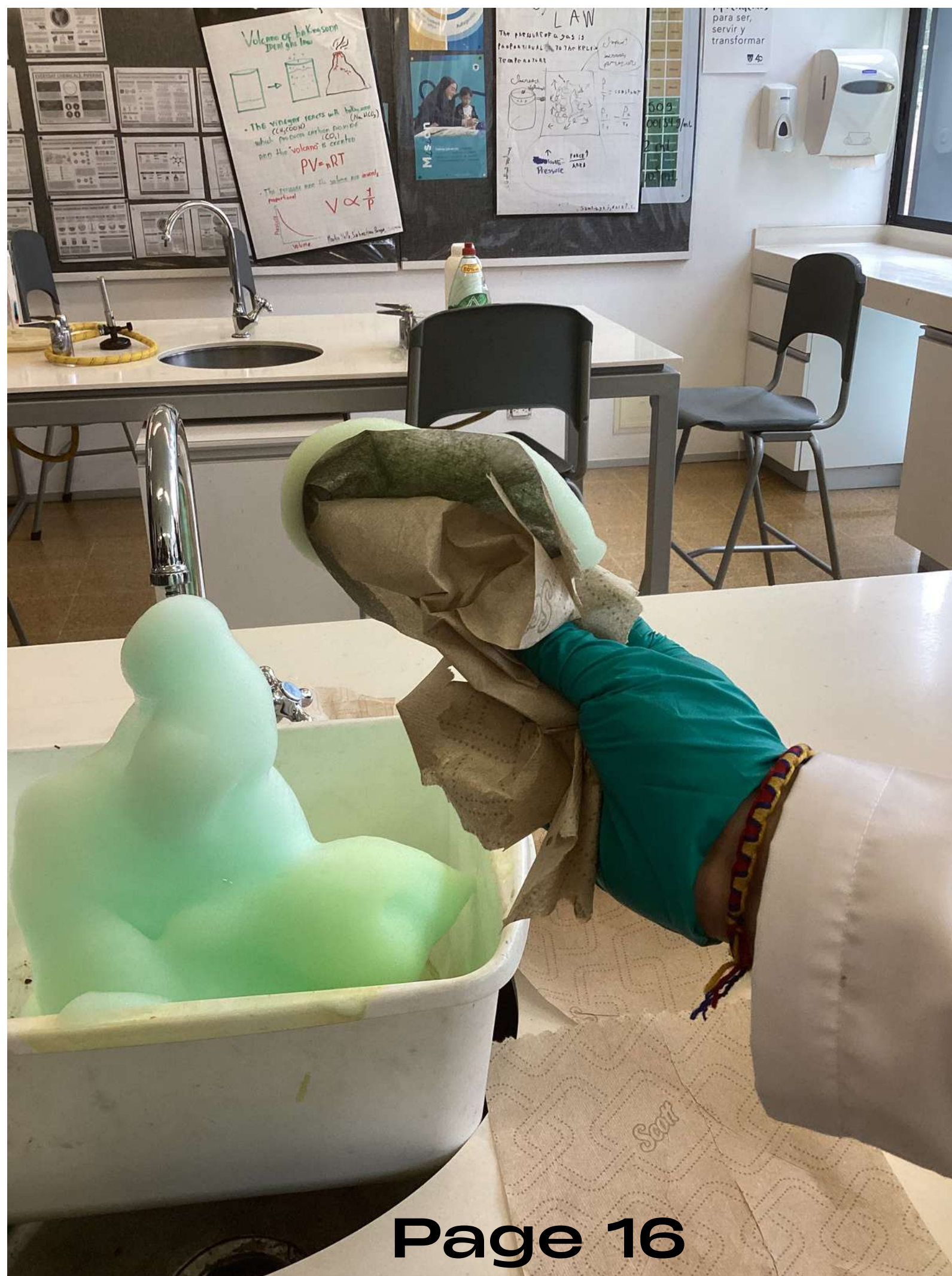


First What kind of mixtures does humans produce? Well humans have changed the earth so much like deforestation and more so humans with plants that they collect they make like shampoos, cream, and so much more so some examples are. Salad Dressing: An everyday mixture is salad dressing. It is typically made by combining oil, vinegar, herbs, and spices. This is an example of a heterogeneous mixture because the different components can be seen and separated. Here not only the salad dressing is a mixture also the vinegar, oil, and spices are also mixtures, so also the mixtures have mixtures that they combined them in. Also there is the Cereal with Milk: A common mixture we encounter every day is cereal mixed with milk. This is a heterogeneous mixture because the cereal pieces float and can be easily separated from the milk, especially if they are left for a while. The milk itself is a homogeneous mixture, but the combination of milk and cereal is not. Here the cereal is also a mixture like the colorants and flour and more.

What mixtures have a greater impact on the environment? Mixtures are for different things, but if you don't use them correctly it can have a big impact on animals and ecosystems. These mixtures are normally homogeneous mixtures. Some examples are, Oil Spills: Oil spills in oceans and rivers are a significant environmental issue. Oil, when spilled, forms a complex mixture of hydrocarbons that can coat marine life, harm ecosystems, and disrupt food chains. This mixture can persist for long periods, contaminating water and soil and severely impacting wildlife. Plastic Waste: Plastic waste is a mixture of synthetic polymers and other chemicals that degrade very slowly, posing long-term environmental challenges. Plastics mix with natural environments, often ending up in oceans, rivers, and landfills, where they harm wildlife, pollute ecosystems, and take centuries to decompose. For example this mixture is heterogeneous mixture.

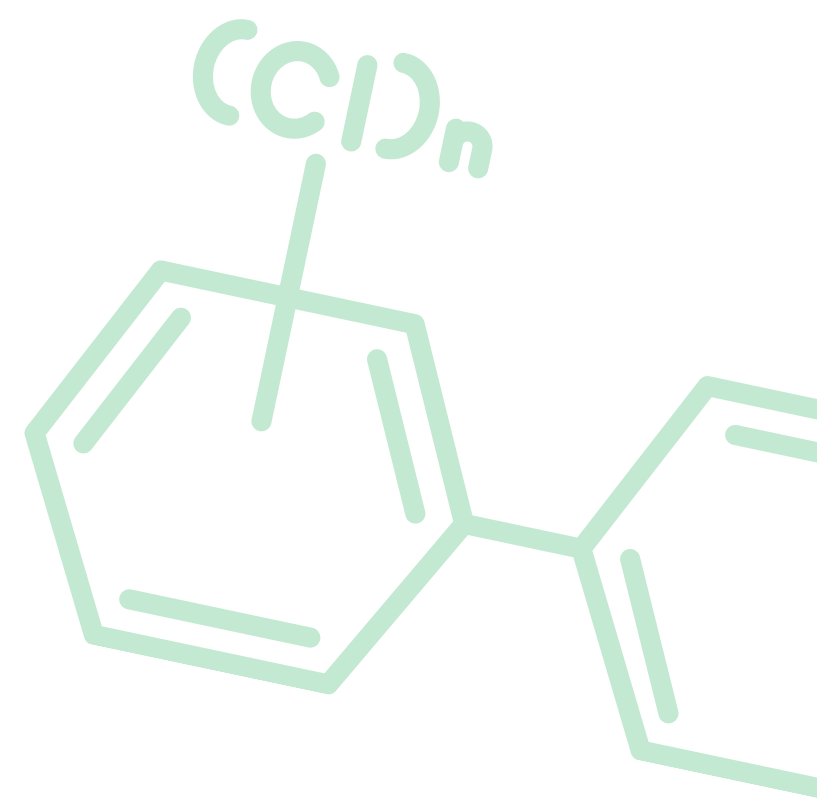


Pesticides in Agriculture: The mixture of chemical pesticides and herbicides used in agriculture can have significant environmental consequences. These chemicals can leach into the soil, contaminate water sources, and harm non-target species, including beneficial insects like bees, and affect biodiversity. Over time, these mixtures can disrupt ecosystems and cause soil degradation. Now how do they affect us? Significant environmental issues like making animals die because they think that they are food or because it destroyed their habitats. Also these provide climate change which is critically affecting the world and us humans. And for last also chemicals get into the atmosphere creating CO₂. In conclusion, mixtures are everywhere in our lives and we are responsible about whether these mixtures have a good impact or a bad impact. Also for future generations they will need to understand what mixtures are and what where they going to be around.



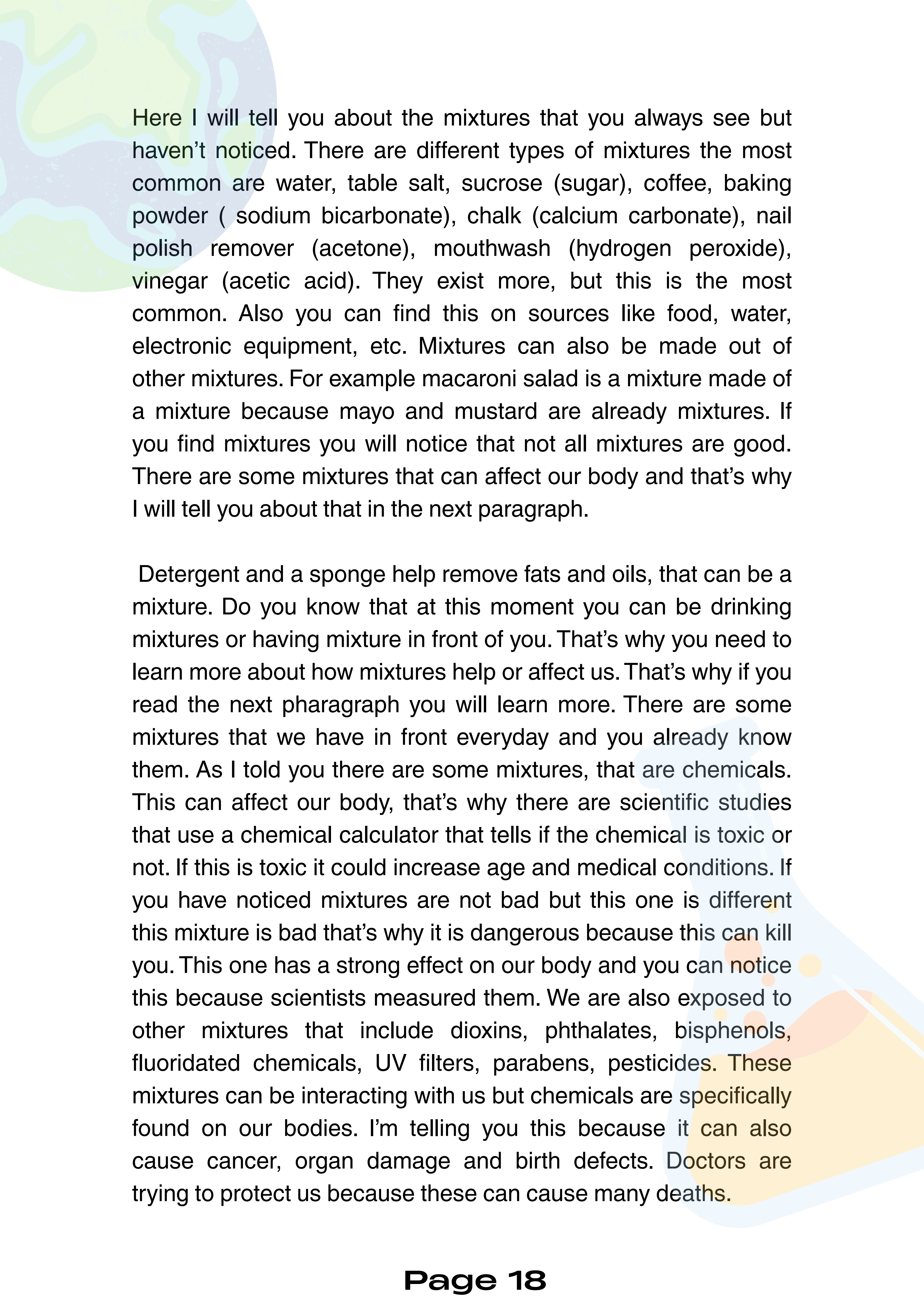
Mixtures

Tomas Rodriguez



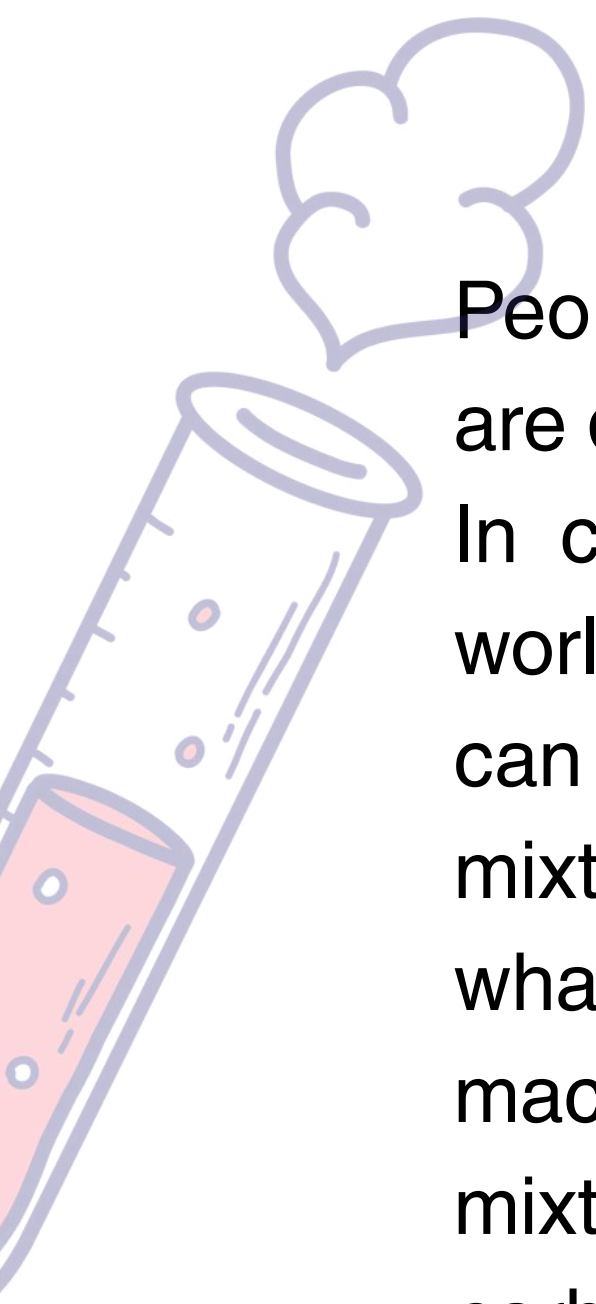
Do you know how many mixtures are surrounding you? There are hundreds of mixtures and there are some that you don't know and are just in front of you like water. I want you to know more about mixtures and what is the impact on us, so when it happens to you, this will help you understand what is happening to you. Also there are things like mixtures in front of you that you need to understand. Mixtures are divided into many parts like homogeneous mixture, pure substances, mixtures, etc. That is why this is important to read because you will learn many things including that. Also you make mixtures and you don't notice. When you cook you are making a mixture of a mixture. Also here you will understand these three topics. Do you want to know more about what mixtures are and what impact they have on the world? In this paragraph I will tell you about all you can think about mixtures.

Mixtures are two or more things combined. Like water and soil that make mud that's a mixture. The size of the particles in the mixture determines the type of mixture. All mixtures are the same but combined differently. For example soil and water make mud but it can also make more things. For example macaroni salad is a mixture of a mixture because mayo and mustard are already mixtures. Mixtures are divided in many parts with different names like homogeneous mixtures, pure substances, mixtures, etc. Also the state of matter that is solid, liquid or gas. Mixtures can appear different things like food, electronic devices, etc. For example, when nail polish is removed. The solid nail polish is the solute and nail polish remover is the liquid, acetone or propane is the solvent. The remover attracts nail polish between the particles, that's why it is removed.



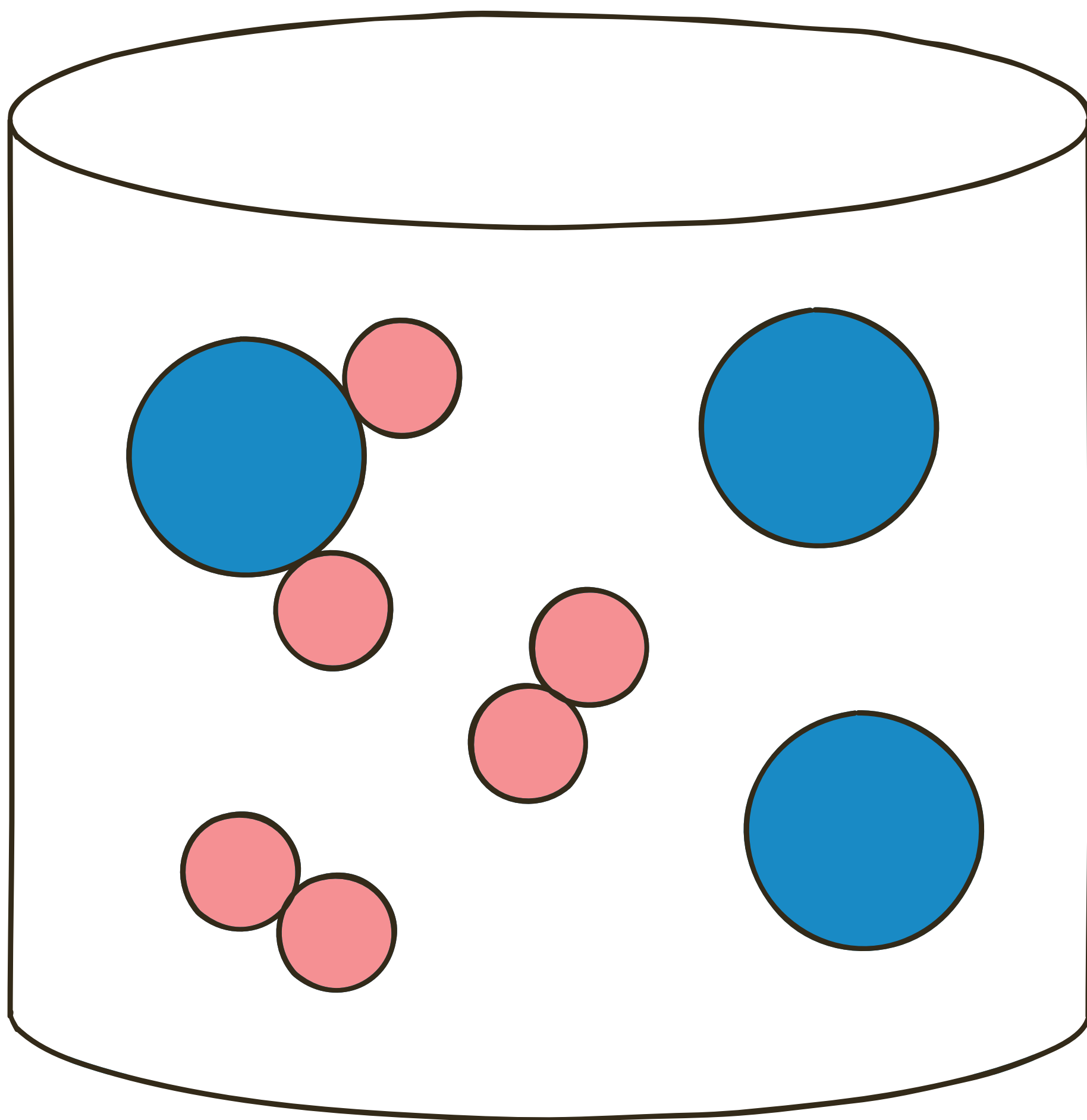
Here I will tell you about the mixtures that you always see but haven't noticed. There are different types of mixtures the most common are water, table salt, sucrose (sugar), coffee, baking powder (sodium bicarbonate), chalk (calcium carbonate), nail polish remover (acetone), mouthwash (hydrogen peroxide), vinegar (acetic acid). They exist more, but this is the most common. Also you can find this on sources like food, water, electronic equipment, etc. Mixtures can also be made out of other mixtures. For example macaroni salad is a mixture made of a mixture because mayo and mustard are already mixtures. If you find mixtures you will notice that not all mixtures are good. There are some mixtures that can affect our body and that's why I will tell you about that in the next paragraph.

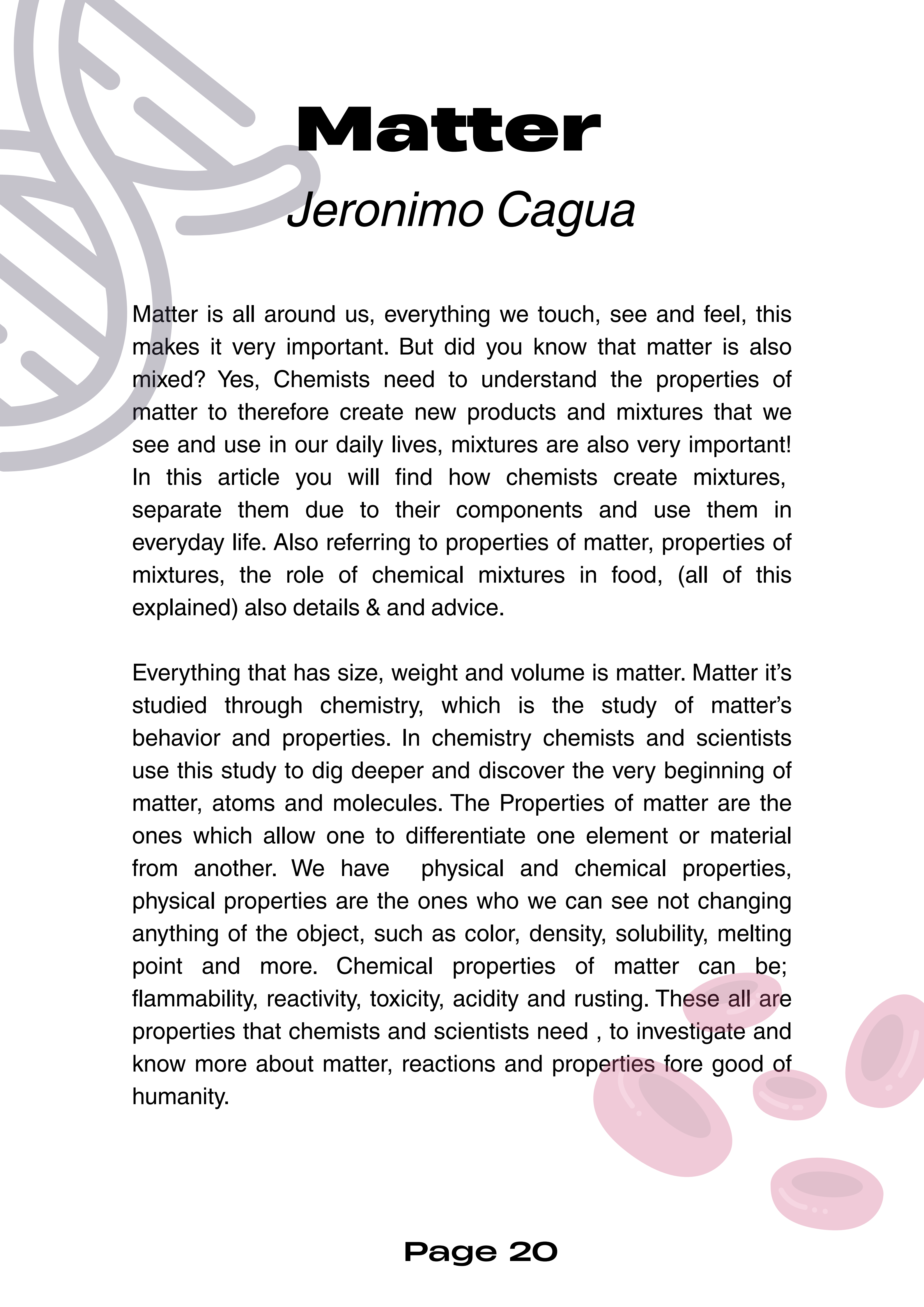
Detergent and a sponge help remove fats and oils, that can be a mixture. Do you know that at this moment you can be drinking mixtures or having mixture in front of you. That's why you need to learn more about how mixtures help or affect us. That's why if you read the next paragraph you will learn more. There are some mixtures that we have in front everyday and you already know them. As I told you there are some mixtures, that are chemicals. This can affect our body, that's why there are scientific studies that use a chemical calculator that tells if the chemical is toxic or not. If this is toxic it could increase age and medical conditions. If you have noticed mixtures are not bad but this one is different this mixture is bad that's why it is dangerous because this can kill you. This one has a strong effect on our body and you can notice this because scientists measured them. We are also exposed to other mixtures that include dioxins, phthalates, bisphenols, fluoridated chemicals, UV filters, parabens, pesticides. These mixtures can be interacting with us but chemicals are specifically found on our bodies. I'm telling you this because it can also cause cancer, organ damage and birth defects. Doctors are trying to protect us because these can cause many deaths.



People need to help themselves and the environment so if you are doing this you can be saving a life.

In conclusion you know that there are many mixtures in our world. That's why you need to learn about them because there can be some in front of you. Knowing this you know what mixtures are dangerous and what mixtures don't. Also you know what mixtures are and how mixtures are made. For example, macaroni salad is a delicious mixture that you can eat that is a mixture made of a mixture. Mixtures can also be protein, carbohydrates, etc. So know you what are mixtures and what not and finally what are dangerous mixtures and why scientists make them proves and why doctors want to help people to do not have in the proves toxic because you know why. I hope you have learned many things about what are some common everyday mixtures, and how can affect us in this three topics.



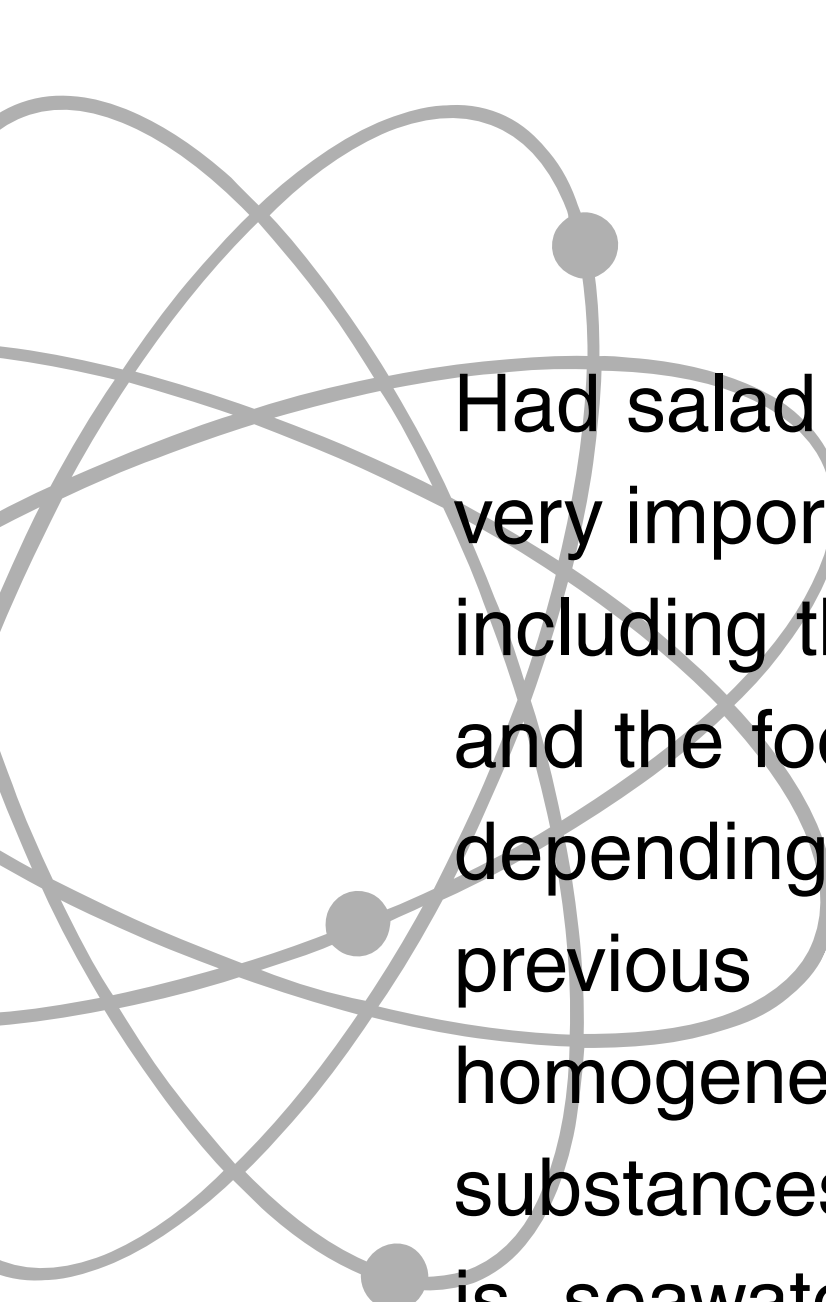


Matter

Jerónimo Cagua

Matter is all around us, everything we touch, see and feel, this makes it very important. But did you know that matter is also mixed? Yes, Chemists need to understand the properties of matter to therefore create new products and mixtures that we see and use in our daily lives, mixtures are also very important! In this article you will find how chemists create mixtures, separate them due to their components and use them in everyday life. Also referring to properties of matter, properties of mixtures, the role of chemical mixtures in food, (all of this explained) also details & advice.

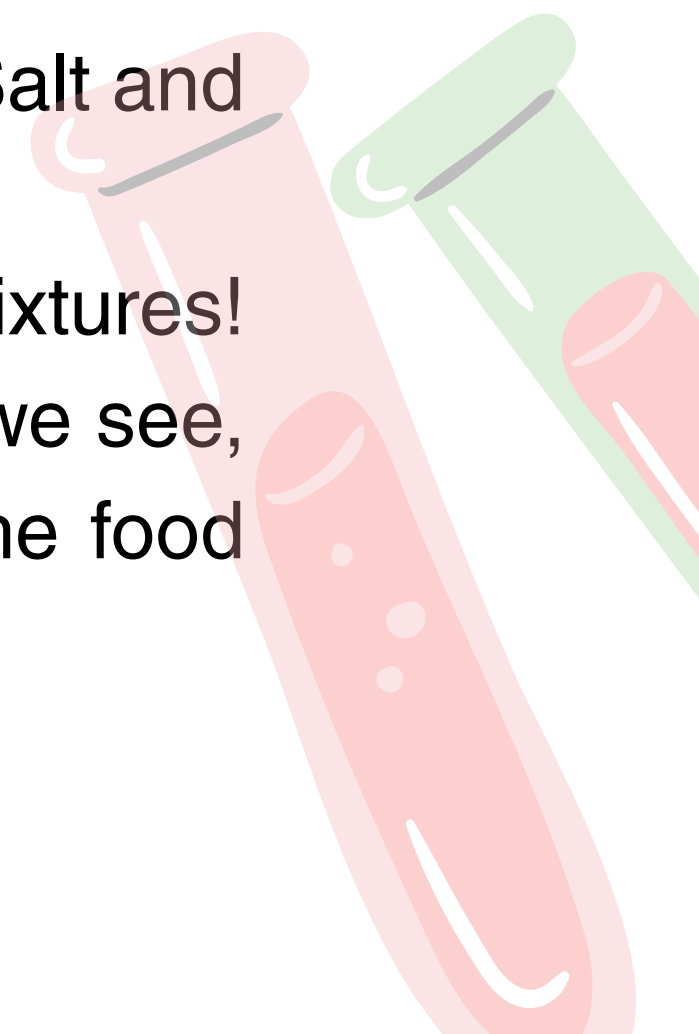
Everything that has size, weight and volume is matter. Matter it's studied through chemistry, which is the study of matter's behavior and properties. In chemistry chemists and scientists use this study to dig deeper and discover the very beginning of matter, atoms and molecules. The Properties of matter are the ones which allow one to differentiate one element or material from another. We have physical and chemical properties, physical properties are the ones who we can see not changing anything of the object, such as color, density, solubility, melting point and more. Chemical properties of matter can be; flammability, reactivity, toxicity, acidity and rusting. These all are properties that chemists and scientists need , to investigate and know more about matter, reactions and properties fore good of humanity.

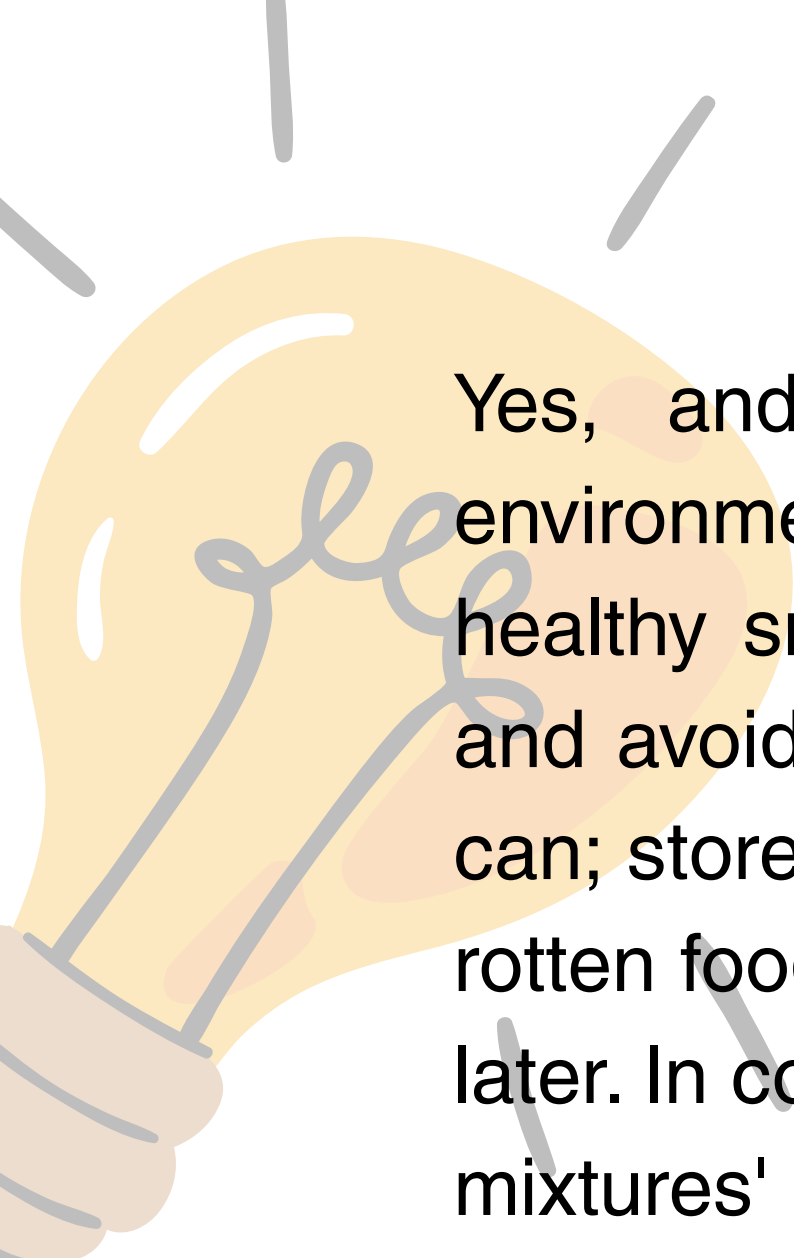


Had salad for lunch? That's a mixture! In chemistry mixtures are very important, because they are present in many aspects of life, including the air we breathe, the materials used to build houses and the food we eat, even our salad. Chemists create mixtures, depending on the properties of the elements used, as in the previous paragraph. The two types of mixtures are homogeneous mixtures that consist of two or more pure substances, which can be elements or sub-mixtures. An example is seawater, which contains salt and water. Heterogeneous mixtures are visible because they have a disorganized composition and have visual distinguishable components. Some examples of common chemical mixtures are air (Oxygen), which is made out of nitrogen (N) and oxygen (O). Mixtures are used to create infinite possibilities for every need. Every mixture can be separated, through different chemist and scientific methods, such as; filtration, which is a common method for separate solids of liquids. Distillation, a more complex process for separating liquids. Sieving, that is with different sized compartments, for different sized particles.

Chemists are usually forced to create mixtures, with the needs of everyday life. Chemists create mixtures for some of these needs: Create new materials, such as in building materials, for improving their strength and durability. Another mixture are solutions, which are mixtures where the components are the same state, such as liquid solid or gas. Also suspensions, which are mixtures which consist of different estate materials, such as a liquid with a solid element. We can find common mixtures in our daily lives such as: Solids, ice in water, on a hot day. Salt and water at the beach, and also our cereal in our breakfast!

It is important to recognize that all around us are mixtures! Including the air we breathe, the food we eat, the things we see, touch and smell everyday. Have you ever noticed that the food we eat are in the majority chemical mixtures?





Yes, and they can damage our human health and our environment. How can we prevent and help? Prepare and cook healthy snacks at home, choose plant-based meals and plant and avoid trans-fats. For our environment helping to reduce we can; store our foods and meals properly, for avoiding waste and rotten food. Also freeze leftovers to use it in other meals or eat it later. In conclusion, it is important to understand your matter and mixtures' influence in our daily lives and how we can prevent negative impacts, for our planet earth.





Mixtures

Maria Antonia Quintero

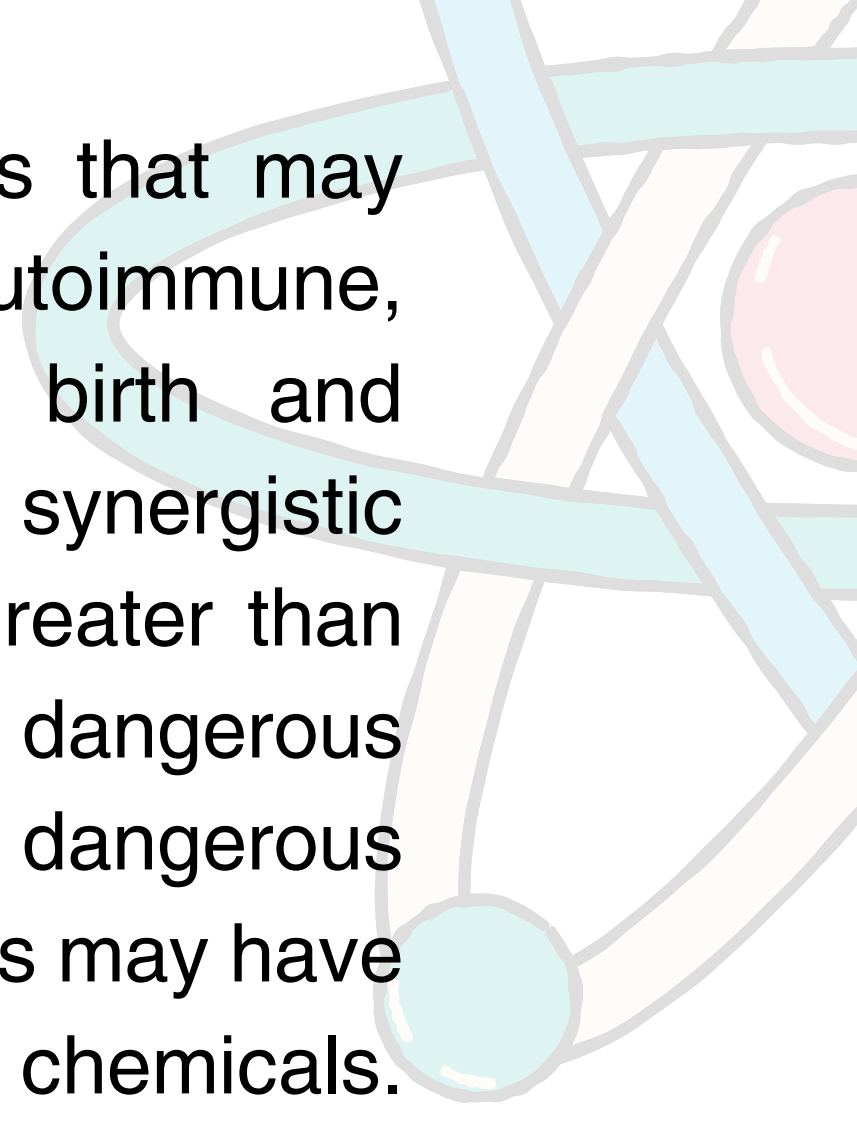
This article explains mixtures and their characteristics, from how they are made to how they can affect us. Mixtures are with us all the time from the moment we are born to the moment we die. Everyday you see and are exposed to many different mixtures at the same time, some are dangerous and some may even help us. So that is why it is important to learn about them and understand how they work so you don't get affected or even get in real bad danger. This article is composed of 5 paragraphs which are an introduction, 3 topics that are about the properties and characteristics of mixtures, the second one is about common mixtures and the third one is how mixtures affect us, and finally the closure. You may be wondering. Why did we wrote this article? We wrote this article because we not only want to learn about this topic, but also because we want to share it with other people so they know what's around them. I found it interesting learning about mixtures because it is something we are with everyday and to know what those things are made me more intrigued, an example of a mixture in everyday life is food because it's a combination of many foods that can still be separated. If you want to learn more about mixtures and all their properties etc, you are in the right place.

What even are mixtures? Well mixtures are a combination of two or more substances that are not chemically combined, but physically combined. This means that each substance keeps their own properties even when mixed with suspensions or colloids. They can even combine 2 substances without creating a new one.

Plus if there is no chemical change which there normally isn't, they can be separated with physical methods like evaporation. Some properties of mixtures are that they can be in any state of matter, and also It can be both homogeneous and heterogeneous mixtures. Practically in other words mixtures are substances that get combined without a chemical change, and still can be physically separated. Some examples of mixtures are salads, air, cereal and milk, blood and seawater. The difference between a homogeneous and a heterogeneous mixture is that you can easily see what are the different components in a heterogeneous mixture and it can be separate but in a homogeneous mixture you cannot see the different components and you cannot separate It. some examples of heterogeneous mixtures are pizza, salad, cereal and milk, etc. And some examples of homogeneous mixtures are air, ink, etc.

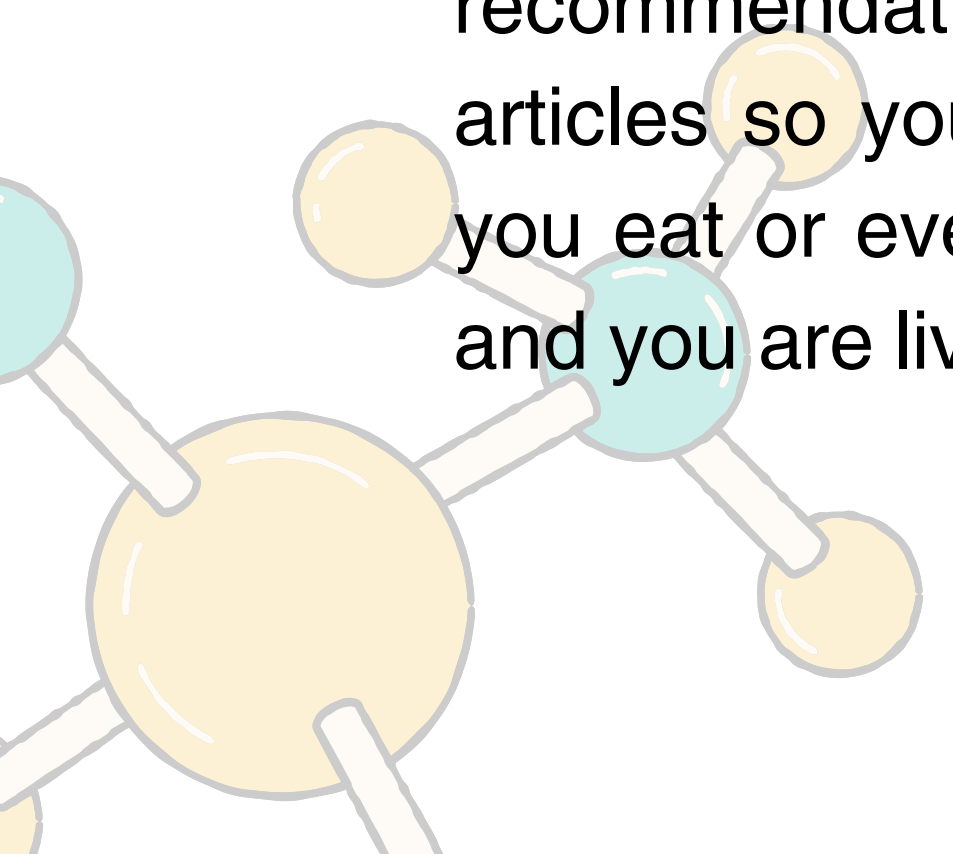
Common mixtures are mixtures that are in your everyday life. Almost everything is a mixture. Some examples of mixtures are food, air, blood, ink, etc. They can be either homogeneous or heterogeneous mixtures. All states of matter can form mixtures. An example of a common mixture for me is a salad of tomato and lettuce, although I don't have it everyday I do eat it very often. It is a heterogeneous mixture because you can separate the contents after they are mixed, and you can easily see there is tomato and lettuce. And an example of a homogeneous mixture for me in everyday life, apart from air, is ink because I use my pen everyday. It is a homogeneous mixture because it cannot be separated, and you can not see the components. Everyday you see or are with mixtures because they are everywhere from air to food, so there isn't any excuse for not to come across to minimum one mixture everyday.

Even though mixtures are in everyday life some can still be very dangerous, and affect us. While some Mixtures act on their own, others interact in ways that can either increase or decrease their effects. Like people are exposed to many mixtures at the same time, effects sometimes can be really complicating.



Some scientists have done research on mixtures that may affect human health. These are some findings: autoimmune, diabetes, obesity, neurodevelopmental, preterm birth and women's health. In an extreme case there can be synergistic effects, this means that their combined impact is greater than the sum of their effects. An example of some dangerous mixtures for me can be air or food. Air can be dangerous because it can carry some diseases. And some foods may have harmful things like dangerous bacteria or dangerous chemicals. Even though mixtures can be harmful, scientists made some tools to help with the research of mixtures and their effects on human health.

Mixtures are a combination of two or more substances that are physically combined, mixtures are in your everyday life and some of them can be really dangerous and affect human health. It is important to know these things for the future and for the present so we can take action if any mixture affects us, and know how to act. Plus people can understand better mixtures, and may create solutions for it in the future. Like I said before mixtures are with us everyday so if you don't learn about them you may end up really affected. Any mixture can be really dangerous and even more so if you already have a disease so if people learn and make more tools to investigate the effects they won't be as dangerous, but still a little dangerous. One of the reasons why I am doing this article is for when people read it they can understand what mixtures are and how they may or may not affect them. People normally don't know what mixtures are, so this article is for people to learn and have more precaution. Although I have a lot of information about mixtures there is tons more information about them. So my recommendation for you is to investigate more and read other articles so you learn a lot more about mixtures. So everytime you eat or even breathe you will know that those are mixtures and you are living with them.



TIME LINE

The Mystery of The Periodic Table

The begininngs of chemistry *C 3000 BCE - 332 BCE*

Location:

Ancient Egypt centered along the Nile River, witch provided fertile land for agriculture and supported the kingdom.

Historical Conflicts:

- **The Battle of Kadesh (1274 BCE)**
Fought between Egypt and the hitties marking one of the hardest chariot battles in history. It resulted in the first known peace treaty.
- **Persian conquer (525 BCE)**
The Persian Empire conquered Egypt under Cambses II, marking the end of native Egypt.

TIME LINE

The Mystery of The Periodic Table

The begininngs of chemistry C 3000 BCE - 332 BCE Scientific & Technological Developments

- **Metallurgy & Alchemy** : Egyptians were experts in extracting gold, copper and iron perfecting techniques like smelting and alloying.
- **Papyrus and early inks**: Egyptians scribes invented black and red inks, made from carbon sand and iron oxides, for reading on papyrus scrolls.
- **Mummification and medicine**: They used natron (a sodium compound) to the hydrates bodies along with resines and and oils to prevent decomposition.

TIME LINE

The Mystery of The Periodic Table

The begininngs of chemistry C 3000 BCE - 332 BCE

Pepole

- **Ramses II: Year (1297 - 1213 BCE)**

He led Egypt in its peak of military and help with architectural expansion and commissioning temples and infrastructures.

- **Imhotep: Year (2600 BCE)**

He was a priest, engineener and physician. He was one of the earliest scientists, plus he contributed to medicine and development of stone architecture.

TIME LINE

The Mystery of The Periodic Table

The first chemists (7000-1200 BCE)

Event:

Soon enough, smelting was used to extract other metals as well, specially more precious metals such as gold and other ores.



Greek and Hellenistic Contributions *C.500 BCE - 70 BCE* Scientific and Technological developments:

- **Name:** Four elements theory:
- **Year:** 450 BCE
- **Event:** Empedocles propouses this idea that influenced scientists
- **Name:** Atomic theory
- **Year:** 400 BCE
- **Event:** Democritus suggested that all that occupies space is made of atoms
- **Name:** Hellenistic alchemy
- **Year:** 323 - 30 BCG
- **Event:** Greek and Egyptians combines philosophy and experimentation.

TIME LINE

The Mystery of The Periodic Table

Islamic golden age
C.750 - 1400 CE

Key events, People and places.
Places: Greece, Egypt, Persia and India.

Key events & people:

- After Alexander the Great. Eupedocles proposed the theory of the four elements.
- Democritus introduced the concept of atoms.
 - Zosimos of panopolis wrote early alchemist texts.



TIME LINE

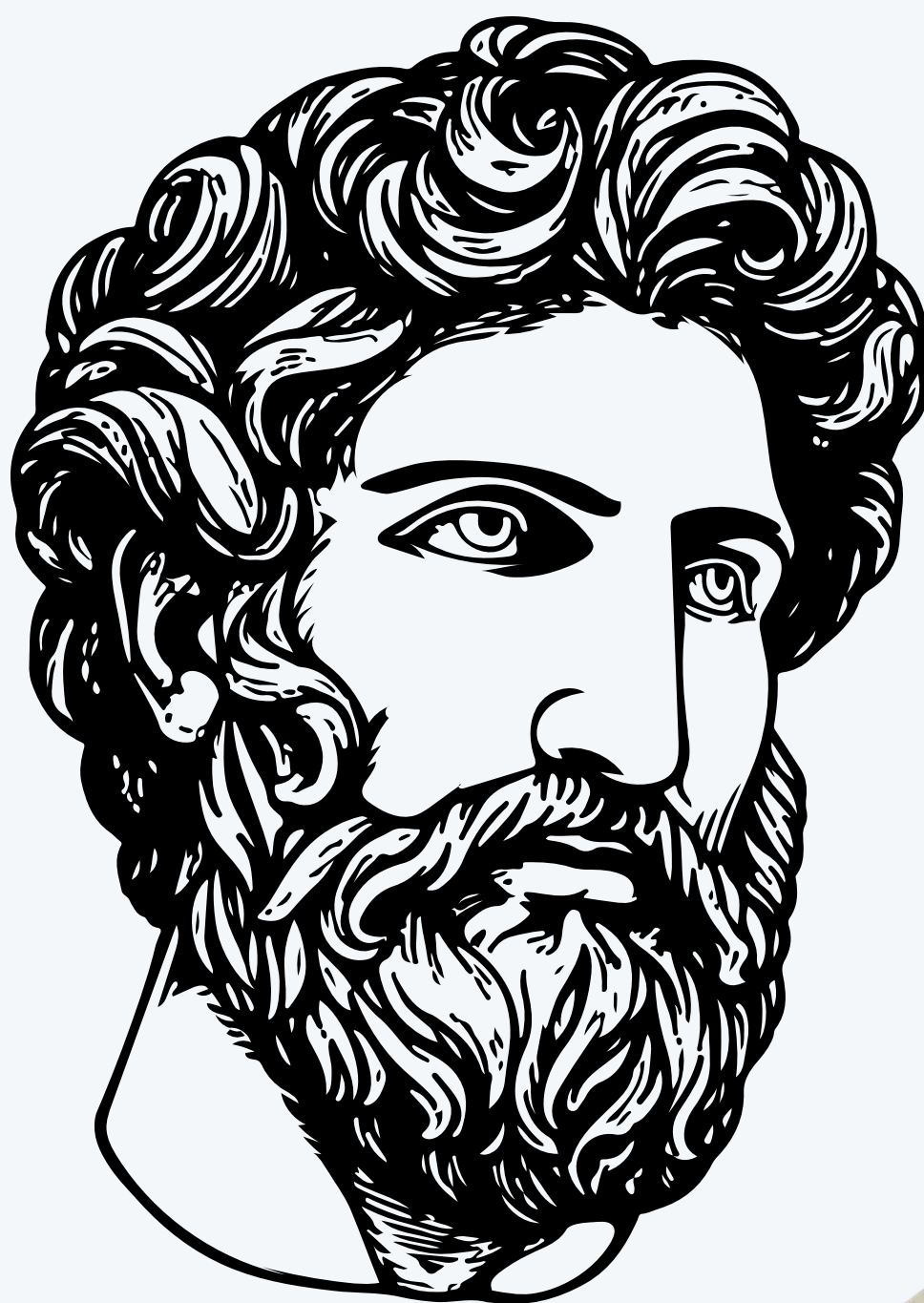
The Mystery of The Periodic Table

Earth, air fire & water

4th to 5th century

Name: Thales

Event: They thought that everything, including earth, water, air and fire were made of tiny uncuttable bits of colorless, smell-less tasteless ammeter such dithered only in shaped and size.



TIME LINE

The Mystery of The Periodic Table

The European Renaissance: The shift from alchemy to chemistry

(14th - 17th Century CE)

Society, Government & Economy

- **Government:** European monarchies funded universities, leading to an increase in scientific research.
- **Access to knowledge:** The printing press (140 CE) spread scientific discoveries across Europe.
- **Trade & Economy:** Colonization brought new raw materials and wealth funding further scientific advancements.

The European Renaissance: The shift from alchemy to chemistry (14th - 17th Century CE)

Place: Italy, France, England, and the Roman Empire

People:

- **Parcelus (1493 - 1541):** He rejected mystical alchemy and helped develop chemical medicine-
- **Robert Boyle (1627 - 1691):** He introduced more advanced chemistry and experimental methods.
- **Antoine Lavoisier (1743 - 1797):** He discovered oxygen also, the law of conservation of mass and also precise chemical measurements.

The European Renaissance: The shift from alchemy to chemistry (14th - 17th Century CE)

Place: Italy, France, England, and the Roman Empire

Key events:

- Led to divisions in the Catholic Church and the rise of scientific independence.
- Marked a shift from religious-based explanations to empirical research.
- A destructive war in Europe, despite chaos led to increased medical and military advancements.

TIME LINE

The Mystery of The Periodic Table

The atomists return 1627 - 1691

People:

- Robert Boyle

Historical and scientific event:

Since the 16th century he was the first who tried to apply the theory of atoms directly to the subject matter of the chemist. Boyle did turn chemistry in the right direction so the chemist would look for elements more fundamental than earth, air, fire and water. He overshot the mark, right past the real elements, such as gold, silver, and so on and directly to Adams.. She discovered the relationship between the pressure and the volume of gas. He also discovered a way to test for acids and bases. He also did many experiments with the newly invented vacuum pump. In fact so many that fellow British referred to the vacuum as the vacuum Boyle.

TIME LINE

The Mystery of The Periodic Table

**“The spirit, hitherto
unknown”**

1579 - 1644 AD

People:

- Johann Baptista van Helmont

Historical and scientific event:

Helmont discovered gas that he believed came from water. He was a Ancient Greek philosopher, this means he thought everything came from water.



TIME LINE

The Mystery of The Periodic Table

The strange tale of phlogiston, the element that wasn't

1635 - 1682

People:

- Johann Becher

Event:

he tried to create a universal language, one language which everyone could speak. His song vanished to convince the government that he could turn sand into gold, but the sand remain sand. He tried to make different things or experiments, but he couldn't get the expecting result.

TIME LINE

The Mystery of The Periodic Table

**Mr. Priestly cleans things
up**

1733 - 1804

People:

- Joseph Priestly

Event:

He originally was a minister, at first he was not a scientist, until he met American Benjamin Franklin Priestly. Which helped him decide his life as a chemist, which eventually would clear things up. He started experimenting with trappings while heating it which produced heat and new types of gases, which later he called oxygen and other ones.

TIME LINE

The Mystery of The Periodic Table

Mr. Cavendish and inflammable air

1731 - 1810

People:

- Henry Cavendish

Event:

Mr. Cavendish was a rich man, but we remember him from first identifying hydrogen and showing that water is made out of hydrogen and oxygen, although he stated that it was inflammable air and he could prove these by the following experiment. Cavendish what he know what we know now to be dilute sulfuric acid first and sink then an iron and finally on 10 using the same methods as before he trapped the gas each time then he did the same thing.

TIME LINE

The Mystery of The Periodic Table

Chemistry French Revolution

1743 - 1794

People:

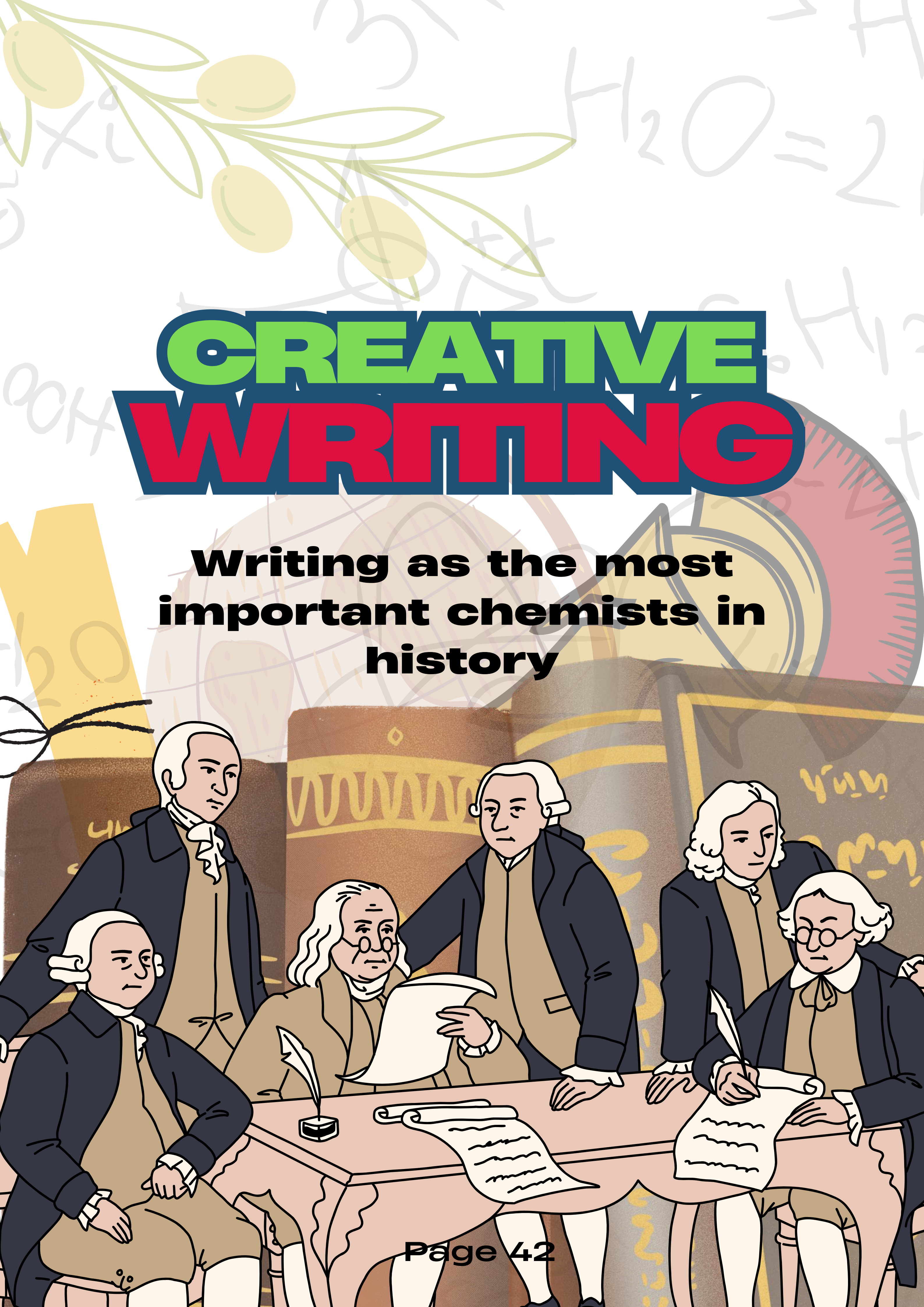
- Antonie lovosier

Event:

He discovered oxigen, and researched the conservation of mass theory, leading chemistry intothe right side.



THE END



CREATIVE WRITING

**Writing as the most
important chemists in
history**



I am Johann Baptista van Helmont

Tomas Rodriguez



I remember the day that I discovered that air was not a single substance. My name is Johann Baptista van Helmont and I am a Belgian chemist. I discovered gas in 1580-1644 by observing the emissions from burning solids and fluids and because that air was not any more a single substance. I was in the laboratory and I realized that gas could not keep a flame burning. Then I discovered carbon dioxide when a gas was released when charcoal was burned. I found another thing about gas that is that when I breathe it I get a sensation that I never felt while breathing other things. Also I thought about what would happen if I burned a piece of wood and charcoal, when it burned I would not find anything. Have you noticed about what happens if we don't breathe air, I will be dead if I didn't breathe air. That's why gas is a great discovery but if you breathe, it can be so hard for humans and animals to breathe that it can cause death. Gas helped me to identify carbon dioxide and to recognize that air was not a single substance. I found that air could not support life alone and I found gas and later found carbon dioxide. I found them because My work also contributed to functions that can be explained by chemistry. I learned about the chemical reaction on living things. I challenged myself, knowing about what plants grow, I thought that was soil. I made an experiment and the challenge that I made to myself was incorrect: plants grow with water and not only with soil. Do you know that I also performed many experiments that made another discovery that was called photosynthesis. I also made another experiment that was that metal was not destroyed by acid. I also made experiments with the result of other experiments like burning charcoal. Finally, I want to tell you that I also create a book that is called that are in different versions.

I am Joseph Priestley

Elena Moreno



I just realized that people understand phlogiston the other way around. I was in my cluttered laboratory, organizing everything in its place. For me, the laboratory is like a recipe, and the elements are the ingredients. To prove that phlogiston worked differently than people thought, I had to conduct many difficult experiments with perseverance. I must have tried a billion experiments before getting it right. One of the experiments I conducted involved using a magnifying glass to focus sunlight on a red powder, which produced a new kind of air (gas) inside the jar. Although that gas was an important discovery, I still didn't know what it was, so I performed another experiment. This turned out to be one of the most groundbreaking experiments of my life. I placed a burning candle inside a jar with that gas, and the flame burned brighter than usual. The remarkable gas produced in the experiment made the candle burn brighter than ever before. This showed that the gas helped things burn more intensely. Later, that gas was named oxygen! When I made that experiment, I was an ecstatic star, shining brightly in the sky. That was how I knew I had discovered something so huge that the entire world would never be the same. But I didn't do this for fame I did it because of my deep curiosity about the natural world.

13/03/1733 - 06/02/1804

Henry Cavendish's perspective

Laura Vacca



Ever since I can remember I have always been utterly absorbed in chemistry. I had performed multiple careful and important experiments in the past, but I could never forget my most famous experiment. Its still as clear as the day in my mind, how could I ever forget it? It was the day that I discovered inflammable gas, I had been experimenting with pouring dilute sulfuric acid on different surfaces. First I poured it on zinc, then on iron and finally on tin. Each time, I was able to capture the gases that were being let out with a method invented by Joseph Priestly. Then I did the same thing again, this time pouring the spirit of salt onto another three metals while using the same method to trap the gases. Finally I touched a lit taper to each of the six samples of gas, and all of them burned with the same pale blue flame! I was so astonished my eyes widened and became the size of an elephant! This was because they had all become the same gas, and since the gas could be lit I decided to call it “inflammable gas”. I thought that this inflammable gas came from the metals, zinc, iron and tin, and since it had burned I started to wonder if I might’ve released the phlogiston trapped inside the metals. This had been an incredible discovery that I knew would be remembered for a lifetime.

I am Joseph Priestley

Nicolas Medina



Can you remember how to discover gases and the theory of phlogiston? Ahh, great memories. It was back in the 1774s when I was starting to be big in science . That's when I had a revolutionary idea and burned down mercury oxide like a piece of butter. Obviously, it isn't an element because it was broken up. But the point is that it is a very curious gas. I tried putting inside of a cup full of this new air, which I named dephlogisticated air because it had no phlogiston ,(Which I will explain later on!) .When I did that experiment, the candle was brighter than the sun! I remember how my lab smells after it. The lab smelled like there were a lot of calx in the air and a combination with candle wax .

Now, you might think “What the hell is phlogiston? We thought that phlogiston is kind of a fantasy,(But nowadays because back in the day we thought it was real), gas that if it is missing, the air is flammable in some kinda way. Also... do you like sodas, coke and water with gas? It was... me again. I discovered how to make this water and make it as pure as a river. I mixed carbon dioxide with water and created this fizzy, delicious drink. A lot of people might not know a lot of me or haven't nearly heard my name, but you may ask any scientist how I helped science and chemistry, and they could tell that without me, they wouldn't have known about gases and air.

13/03/1733 - 06/02/1804

Maybe you may remember me with a little more actual man, who used this experience that I'm sharing with you to discover more things. His name was Antoine Lavoisier. With my discoveries, he discovered the law of conservation of mass, which says that a meter is never broken up. But it travels to somewhere else. That boy had a lot of talent. Just like he was my son. My imaginary son, unfortunately. The important thing of my life is that I left my impact in science and chemistry. I also helped scientists to explore such as Lavoisier Kid. I guess you may not be interested in this biography, but, if you are interested, I would be glad for you to help humanity as I did.



I am Jhon Dalton

Maria Antonia Quintero



I remember the first time I got confused with red and green. I was very confused about what was happening because I hadn't noticed until that moment. So I wondered at that exact moment, "Why do some people see the world differently"? I was so curious to find more about It, like if my curiosity was a light in the dark. So I decided to investigate more about It. First I asked more people with the same problem to share their cases with me. Then I did some tests, some of those tests were to stare at objects and to see how people with color blindness saw them differently to those who don't have It. Those tests helped me figure out how color blindness worked on people. Then I decided to write about It. I actually was the first person to write about color blindness. I wrote my findings and I also said that It could be passed from generation to generation. I helped people understand color blindness better, how It was not a bad thing but something we could learn from. Even though I have It I still became a really amazing scientist because color blindness didn't affect me, and It shouldn't affect you either.

6/09/1776 - 27/07/1884

I am Humphrey Davy

Luciana Marin



I ediscovered that I can make people laugh without a joke. When I started my discoveries I focused only on nitrous oxide. That's when I discovered laughing gas. I was curious like a little puppy, so decided to try it on myself. It felt if I was in haven, because I was so happy and excited. Then I thought of giving it to others to try it and see how would they react. They tell me that they felt awesome and supper happy, so they suggest that I should do something to make all the world to know about it. Then it was when I got the awesome idea of creating a book. I started writing and I didn't know what was it was going to created. Lately people have started using the laughing gas to many things. For example they have use it for take away the pain during the surgeries. So now I will continue my research of new gases and elements.

17/12/1778 - 29/05/1829



Humphreys

perspective

Sofia Valbuena Torres



I think that everything in this life has a purpose and that everyone has an objective. One day, in my laboratory, I asked myself: What is my purpose? What is the objective of my life? At that moment, I remembered all the things I loved to do, and my favorite was always chemistry. I suppose that is my goal. My objective is to do something meaningful with it. As I mentioned, at the beginning, it was difficult; the process was long and hard, but it was also fun. With time, I had to find something... or not? One day, in the afternoon I used electrolysis to isolate new elements, including sodium, potassium, calcium, magnesium, barium, and strontium. When I decided to fully dedicate myself to this work, it was amazing like gold. I knew it was the best decision I could make. I was heading in the right direction. I don't know how to describe what I feel, but it was something special, the happiest moment of my life. I hope that in the future people can talk about me, and my important work in chemistry. In the future this work laid the foundation for modern electrochemistry. I hope that my work can help to answer the mystery of chemistry. I'm happy to have and resolve my purpose and complete my objective.

17/12/1778 - 29/05/1829

I am Antoine Lavoisier



Nicolas Bohorquez Murcia

I remember when I was 7 years old, my curiosity about science began to grow. One day, I learned that Antoine Lavoisier burned materials like metals and wood. He observed what happened to the weight of the substances. Every day he burned something, he measured the material before and after the experiment. He noticed that the amount of matter didn't change. I remember that Lavoisier explained that matter does not disappear or get created; it only changes form. This was a very important discovery for science. He conducted this experiment to understand what happens when fire is applied, as well as to investigate the relationship between weight and matter—a significant contribution to history. This law applies to all chemical reactions, even those occurring in living organisms. Lavoisier's work was also crucial because he helped lay the foundation for the first periodic table. He named several elements and discovered which ones were essential for life. I remember that he named oxygen as the most important for life, but I now know that oxygen, hydrogen, and carbon are the most crucial elements for life.

26/08/1743 - 08/05/1794

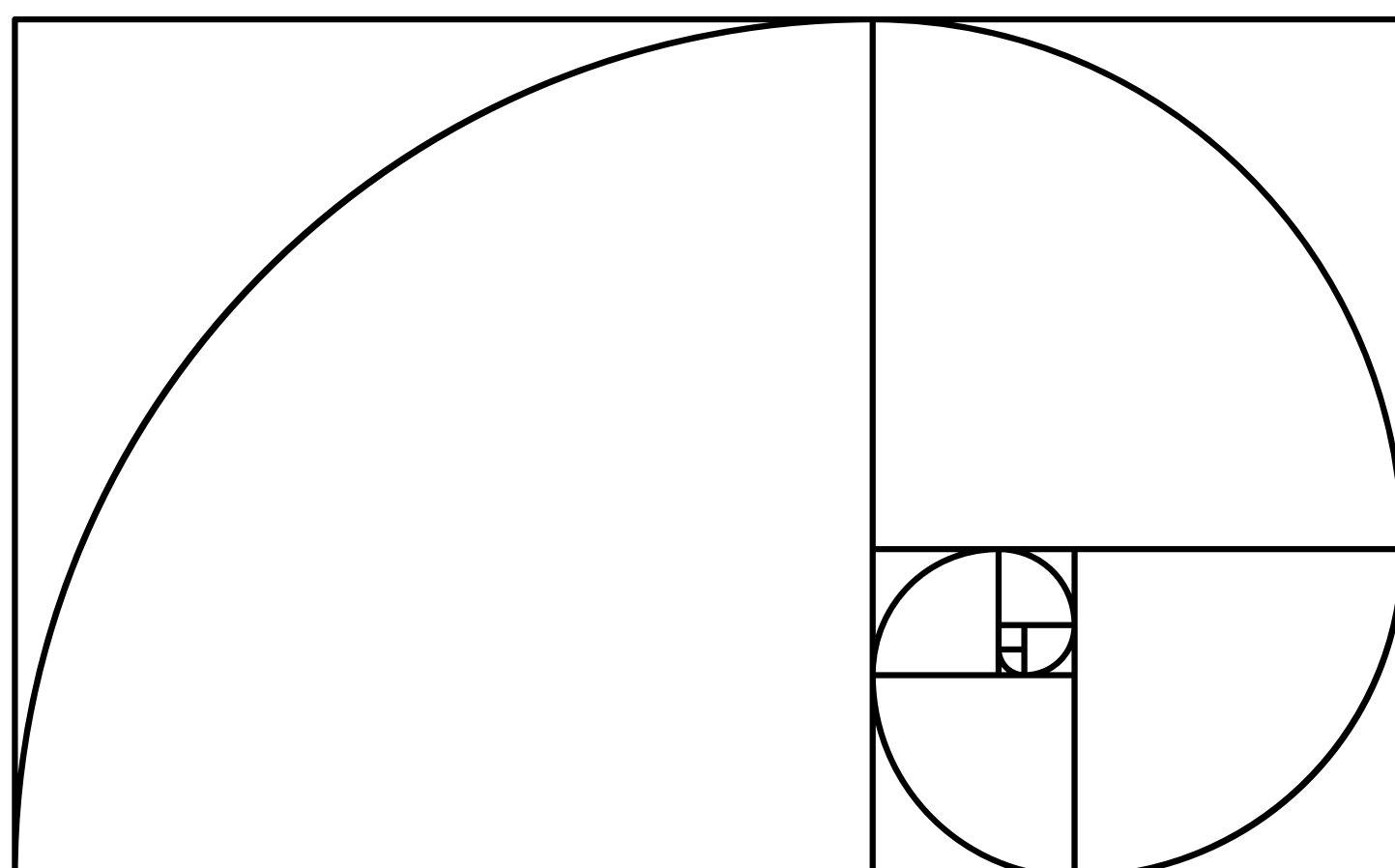
I am Antoine Lavoisier

Tomas Rueda

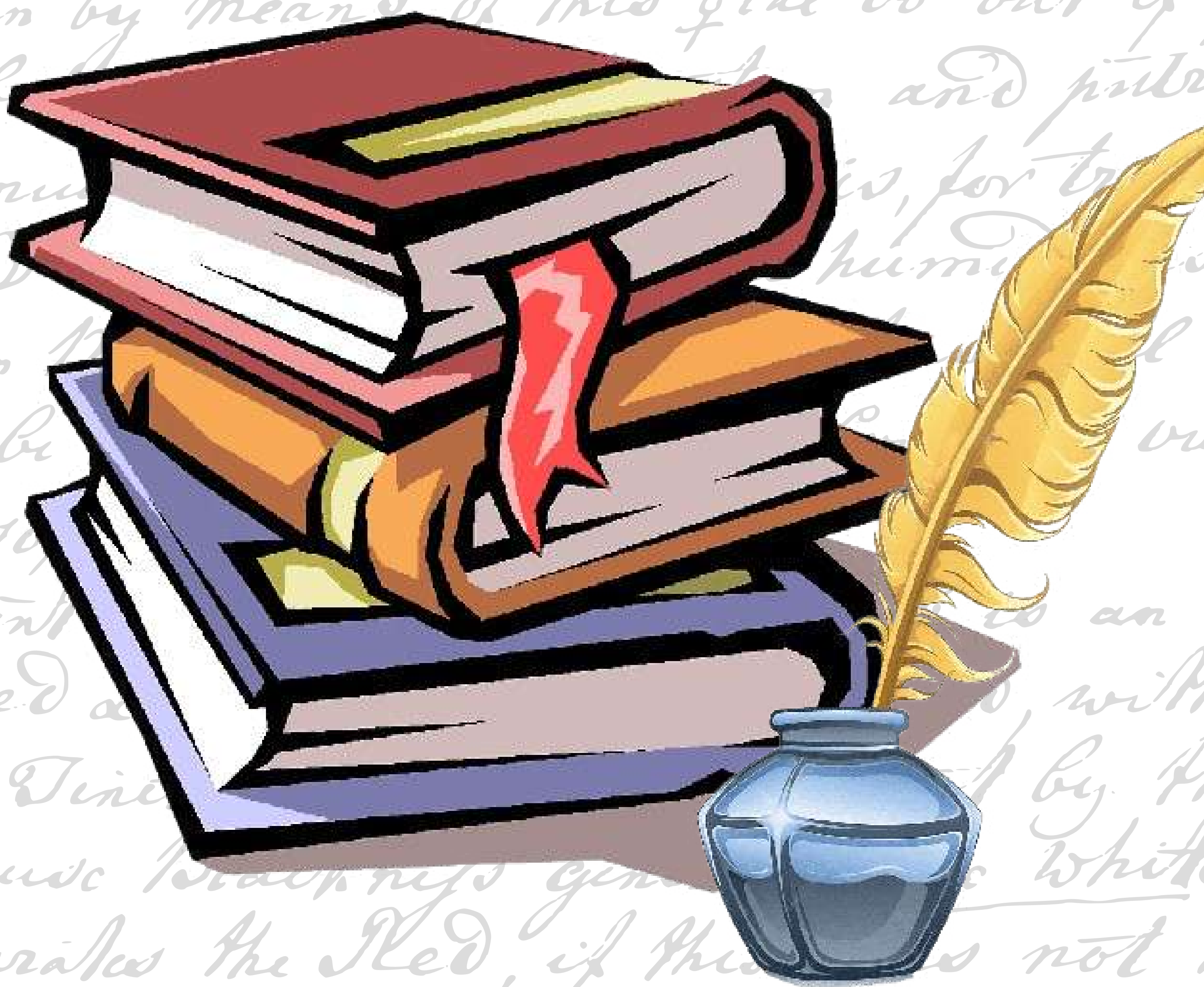


I remember the day when I discovered the proportion of mass as it was yesterday. I had to do a million things that day. But my groundbreaking discovery was as good as a treasure. I was very cautious with my experiments. I always weighed my components before doing a chemical reaction and after it to see that a chemical reaction does not affect the weight of the matter. On another day I did the groundbreaking experiment that was burning matter in a sealed container and before and after weighing it it weighed the same. This states that a chemical reaction did not affect the weight. After doing this experiment I felt really good and satisfied, because I felt that I contributed to science a lot. Without my discovery no one will know how a chemical reaction affects matter. In conclusion a chemical reaction does not affect the weight of the element and my discovery was a very important step towards the evolution of chemistry

26/08/1743 - 8/05/1794



POEMS



Silver

Tomas Rueda

47	2
Ag	8
Silver	18
107.87	18
	1



Oh, silver! Thank you for being the best natural conductor of my light.

Oh, silver! Your dangers make me difficult to touch you.

Oh, silver! Thank you for not being toxic to nature which makes you bright.

Oh, silver! When I smell you, you harm me because of your toxic substances.

Oh, silver! Why are you found in Peru, China, Mexico, Russia, USA and not in Colombia, if I want to search for you?

Oh, silver! I love your durability when you are combined with copper.

Oh, silver! You make the world deliver happiness when you are used as jewelry.

Oh, silver! Thank you for your beauty because when I give a piece of you to a girl, you fulfill her.

Oh, silver! You are my light that makes my day bright.

Oh, silver! Your properties make you shine in the day and night.

Oh, silver! Thank you for transmitting me happiness every time I see you.

Oh, silver! Not even gold or the moon can shine like you.

Oh, silver! Not even dirt or rust can stain your brightness.

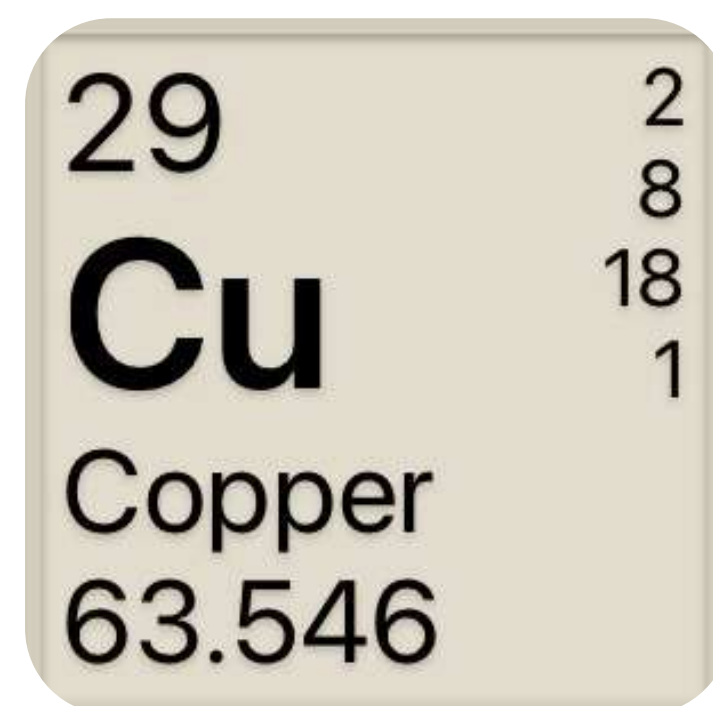
Oh, silver! You are the star that brights the most.

Oh, silver! Your thermal conductivity is the best, which makes you better than the rest.

Oh, silver! All your characteristics makes you my number one.

Copper

Maria Antonia Quintero



My name is copper
I'm a really good hopper
I'm kind of reddish-brown
While I'm a total clown

My density is nine
And I rock online
People have know me for thousands of years
And I still do my appears

I'm really toxic
But I used to be exotic
I form alloys such as bronze
Plus I have really cool bonnes

My name comes from a latin word
Which is actually blurred
I'm abundant to the earth's crust
While i'm actually the dust



Iodine

Laura Vacca

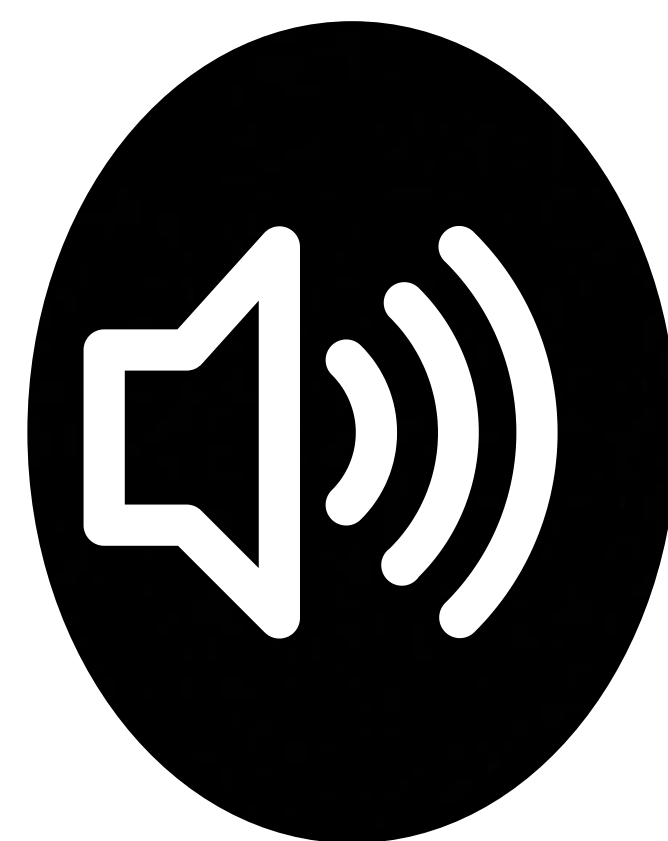
53	2
I	8
	18
	18
	7
Iodine	
126.90	

My name is Iodine
Please don't take me as a sign
I'm essential for your skin
Just don't take me for a spin.

I'm not very bright
My color is as dark as a night sky
Dark gray to purple black
Each time you burn my back

I'm also quite sublime
Turning solid to Vapor, anytime you blink
Not losing any time
I don't turn into a drink

My symbol is I
My group is halogens
My number rhymes with tree
You're right it's fifty-three





19	2
K	8
Potassium	8
39.098	1

Potassium

Elena Moreno

Element for growth,
Element of oath.
K, symbol of potassium,
Soft like silky clouds.

Where am I?
You might say sylvite,
You might say carnallite.
They are both right.

You are alive like a butterfly
When you use my life.
I am with you every day,
Celebrating by your side.

Be careful with me,
I can act explosively, like a firework in the sky.
If you use me too much, you can die,
But I can also keep you alive.



Xenon

Sofia Valbuena

54	2
Xe	8
Xenon	18
131.29	18
	8

This element impresses only with its name,
Xe is xenon and have much fame.
One of the rarest in the atmosphere,
Only 0.0000087% of air.

When we talk of my favorite number,
Fifty-four is the answer.
That's its atomic number, no debate,
No other number is quite as great.

With its property room temperature,
And properties of perfect nature.
A gas so pure, with noble grace,
Its hidden value finds its place.

It's simple but special indeed,
Colorless, odorless, but don't indeterminate.
Invisible - but don't negligible.
No less than others — it's truly incredible .

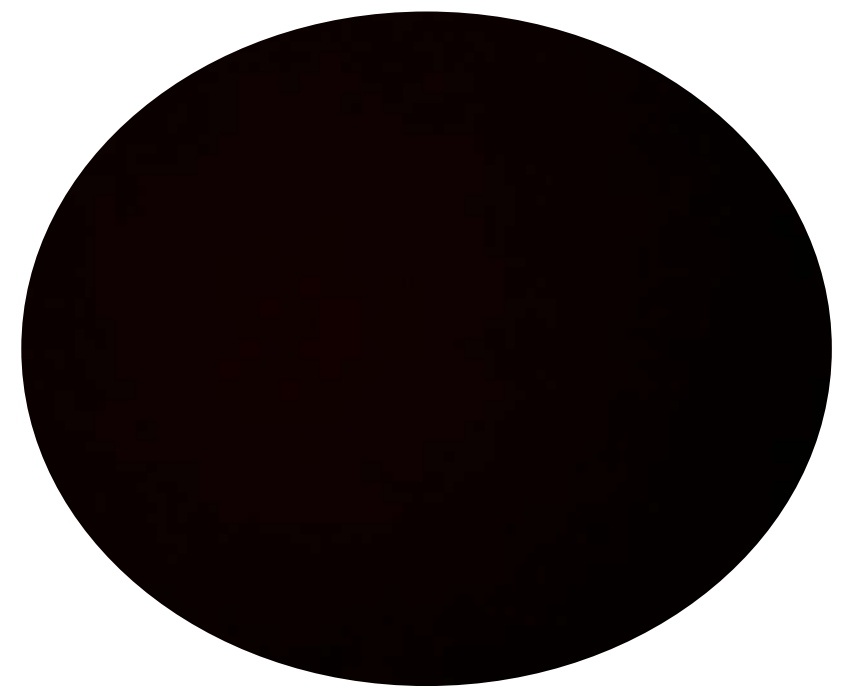


Helium

Juan Martín Bernal Beetar

2	2
He	
Helium	
4.0026	

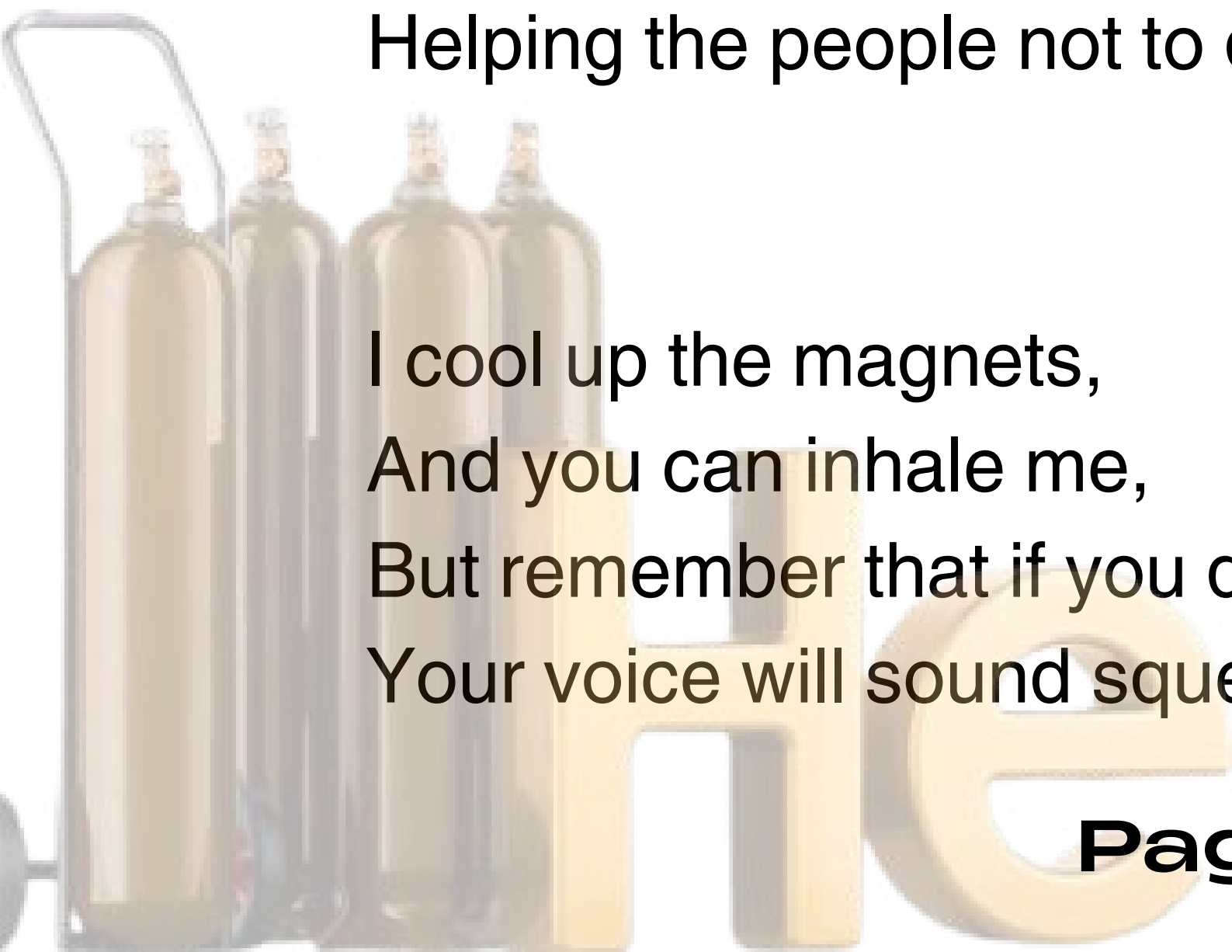
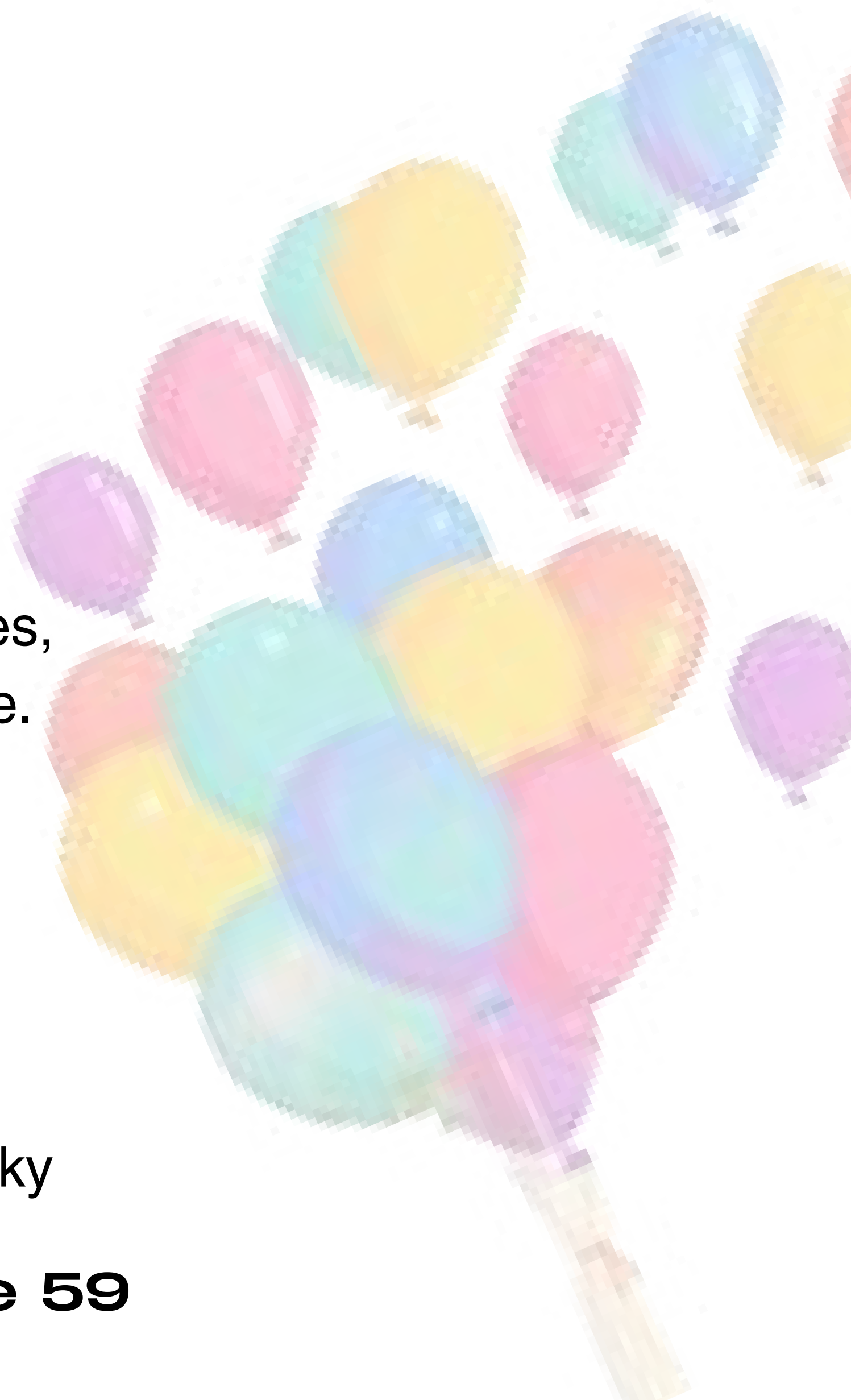
I am a noble gas,
And I'm made of little mass,
I have no color and no smell,
And we are not counting my fancy name.



I don't have friends,
Nobody mixes with me,
But I fill up balloons,
To have fun with the kids.

I have explored the ocean,
Helping the people to dive,
I have also explored the skies,
Helping the people not to die.

I cool up the magnets,
And you can inhale me,
But remember that if you do
Your voice will sound squeaky



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CHEMISTRY MIXTURES

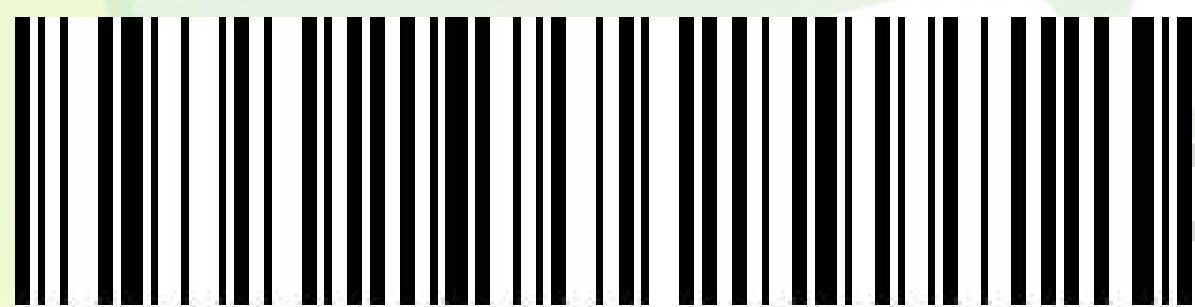
THE ULTIMATE GUIDE

This magazine was made by 12 amazing 5th graders, which had been making a great effort to make this magazine as engaging as it seems and the insides of this great writings, lead you to the past, to the questions asked and that should be asked. Finally, you, the reader should use this knowledge to create new projects, experiments and lead humanity with the change and innovation.

-Nicolás Medina Reyes



Treehouse Comix



Sci Mag LED