

# Chemistry in our life assignment



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| Top of Form |[pic][pic][pic][pic][pic][pic][pic][pic] | | Throughout our lives, chemistry plays a key role in keeping us healthy. Today we're living | | | healthier and longer lives—more than 30 years longer over the past century—thanks in large part | | | to innovations made possible by the business of chemistry. | | And the future holds new breakthroughs, from shelf stable “plastic” blood that mimics | | | hemoglobin... to artificial skin that lets prosthetic wearers sense touch and temperature... to | | | nanotechnologies that deliver custom designed drugs based on a patient's DNA.

All made possible | | | by chemistry. | | | Chemistry and Health Care: | | | Chemotherapy and other drugs now are delivered more accurately on plastic patches and dissolving | | | discs, and nanotechnology can deliver drugs to specific cells. | | Premature babies are kept safe and warm in plastic incubators. | | | Vaccines have eradicated once crippling diseases. | | | Medical devices such as pacemakers and blood bags save lives every day. | | | Lifesaving medicines help us combat disease and live longer. | | Diabetics readily test their blood sugar levels with a simple chemical test. | | | Chemistry and Safe, Abundant Food and Water: | | | Food growers use chemistry to apply fertilizers that deliver essential nutrients to soil, | | resulting in a wholesome, abundant food supply—without fertilizers, the world food supply would | | | shrink by one-third! | | | Food growers also use chemical compounds to eradicate a plethora of disease-carrying pests that | | | compete for our food supply. | | The World Health Organization estimates that diseases associated with dirty water kill at least | | | 6, 000 people every day. Chlorine chemistry is the most effective weapon against waterborne | | | bacteria and viruses—that's why water treatment facilities across the world

rely on this basic | | | element to clean and disinfect drinking water. | |

Chemistry and Active, Healthier Lives: | | | The gear and equipment we use today at the gym, on the playing field and on the trail are | | | predominately products of chemistry. | | | Football, baseball, hockey, lacrosse, skateboarding—nearly every popular sport relies on plastic| | | pads, helmets and other protection. | | Plastic fibers make our workout clothing breathe and wick away sweat. | | | Modern swimsuits help athletes glide through the water. | | | Cyclists, skiers, hikers, mountain climbers and other outdoor enthusiasts all rely on carbon | | | fiber-reinforced plastic gear, safety equipment and clothing, from skis to helmets to goggles to| | | ropes to insulating fibers. | |

Policies to Advance Knowledge and Improve Health | | |

Promoting the safe use of the essential products of chemistry is a shared responsibility of | | | manufacturers, the government and those who use or sell chemical products.

Manufacturers and | | | government must work together to: | | | Develop, implement and comply with sound regulations so chemicals are safe for intended use. | | | Enhance scientific understanding of chemical safety. | | | Produce publicly accessible safety information. | | | Americans must feel confident that the federal regulatory system is keeping pace with the | | | applications of chemistry.

Our nation’s primary chemicals management law must be updated to | | | adapt to scientific advancements and to promote that chemical products are safe for intended | | | use—while also encouraging innovation and protecting American jobs. | | | Learn more about policies that can help American chemistry continue innovating, creating jobs | | | and enhancing safety. | | |

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Chemistry Daily Water Purification Makeup Batteries Items Everyday Life Coloring Tires Alarm Keywords: Top of Form [pic] Bottom of Form 123 YEAR 11 CHEMISTRY RESEARCH ASSIGNMENT Chemistry in Everyday Life TOPIC:- “ Applications of Chemistry in Health and Hygiene” Throughout the centuries, there have been many benefits brought by chemistry to our daily living. Two significant contributions made by chemistry towards our lifestyle <https://assignbuster.com/chemistry-in-our-life-assignment/>



is the protection of our health and hygiene. The purification of our water by process of chlorination, dental cleanliness from toothpaste, sterilisation, the control and the cure of disease are all a part of daily living discovered and created by chemistry.

These discoveries make up a major component for the protection of our health and hygiene and are vital for the future existence of mankind. The ideal water for humans is hard water. Hard water is healthy as it consists of calcium,  $\text{Ca}^{2+}$ , and magnesium,  $\text{Mg}^{2+}$ , ions.  $\text{Ca}^{2+}$  are needed in the formation of bones and are important in the clotting of the blood and regulating the heart beat.  $\text{Mg}^{2+}$  are needed for making protein and for passing impulses along nerve cells. The chlorination of water for drinking makes the water safe because it rids it from the diseases which can be transmitted through it. However, ideal water isn't necessarily pure water. Pure water is expensive to produce, is tasteless and lacks in magnesium ions.

Magnesium ions reduce the incidence of the hardening of arteries and therefore is used in the protection against heart disease. The gas chlorine,  $\text{Cl}_2$ , is most useful to purify water. Chlorine kills viruses and bacteria because it reacts with water to produce hypochlorous acid.  $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{HClO}$  hypochlorous acid One aim of chemistry is to maintain dental cleanliness. Bacterial infection of the tooth structure is called dental caries. The bacteria convert the sugar in our diet, particularly sucrose,  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ , to a glue to stick themselves to the tooth surface. Acids such as acetic, propanoic and lactic are also produced. These acids cause the calcium phosphate in the tooth enamel to dissolve. The reaction is:

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$\text{Ca}_3(\text{PO}_4)_2 + 4\text{H}^+ \rightarrow \text{Ca}(\text{H}_2\text{PO}_4)_2$  soluble calcium dihydrogen phosphate

When the enamel weakens, the organisms can then invade the tooth which may eventually be destroyed. The fluoridation of water supplies is beneficial as the hydroxide ions in the tooth enamel are replaced by fluoride ions. It has been suggested that the fluoride ions slow down the growth of bacteria. The aim of toothpaste is to clean and polish the teeth. It basically consists of a mild abrasive, usually powdered calcium carbonate and a small amount of soap. These solids are suspended in a liquid, usually glycerol, and dyes and flavourings are added.

The addition of fluoride ions,  $\text{F}^-$ , from sodium fluoride,  $\text{NaF}$ , is beneficial for children as the fluoride ions will help form a stronger enamel while their teeth grow. Sterilisation is the destruction of bacteria and is an essential part in the fight against disease. Heating is used to kill bacteria and the cooking of food is an everyday example. Milk is partially sterilised by heating it to about  $80^\circ\text{C}$  and maintaining the temperature for about 16 seconds. This process is called pasteurisation and ensures that all potential harmful bacteria are destroyed within the milk. Chemists have produced many bacteria killing chemicals and the use of these has saved many lives.

The first of these chemicals was a dilute solution of carbolic acid,  $\text{C}_6\text{H}_5\text{OH}$ . In 1865, a surgeon named Joseph Lister began sterilising surgical wounds with this solution. The number of deaths in his wards decreased because of this practice. Two main solutions used to kill bacteria in the home are antiseptics and disinfectants. Disinfectants are stronger than antiseptics and are too harsh, irritant or toxic to be used on the skin. It is usually used to clean or sterilise objects such as surgical instruments. Antiseptics are used on the

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skin, either before surgery or on cuts and bruises, and prevents sepsis which is the destruction of the tissues by bacteria.

One aim of medicine is to control disease with the use of chemicals.

Chemicals, or drugs, are made from natural causes such as plant or animal extract, or are made in the laboratory. The most successful synthetic drug in the world today is called acetyl salicylic acid, or more known as aspirin. It is made from salicylic acid, a disinfectant, and acetic acid. Aspirin is anti-inflammatory, meaning it reduces swelling, redness, relieves arthritis and is effective against stroke. However, if used too much side effects such as internal bleeding of the stomach occur. Aspirin is also known as an analgesic as it is a pain killer. Three types of pain killers are strong analgesics, local anesthetics, and sedatives.

Strong analgesics are complex nitrogen compounds isolated from opium such as morphine ( $C_{17}H_{19}NO_3 \cdot H_2O$ ). Local anesthetics reduce the sensitivity of nerve fibers to reduce pain such as cocaine ( $C_{17}H_{21}NO_4$ ).

Sedatives are drugs which reduce tension and anxiety such as codeine ( $C_{18}H_{19}NO_3 \cdot H_2O$ ). Another aim of medicine is to cure disease. The use of chemical agents to destroy infectious organisms, or diseases, without destroying the host is called chemotherapy. Before 1900, only three chemical remedies were known: chinchona bark for malaria, ipecacaunha for dysentery, and mercury for syphilis. Very significant types of drugs related to chemotherapy are drugs containing sulfur, or sulfa drugs.

Sulfa drugs are dyes that are specifically lethal to harmful microorganisms.

Protonsil was the first sulfa drug. It breaks down in the body to sulfanilamide,

which is effective in destroying streptococci. | Most people have chosen to write their essay about how chemistry has played an important role in | [pic] [pic][pic][pic][pic][pic][pic] | | everyday life. I have chosen to ask, how doesn't it play a role in everyday life? The simple fact| | is that chemistry plays an important role in every person's daily activities from the moment | | we're born. | | So what role does chemistry really play in everyday life? Well, this involvement usually begins | | first thing each morning. Most people wake up to an alarm or radio. These common household items | | contain batteries, which make them very chemically dependent. These batteries contain positive | | and negative electrodes. The positive electrode consists of a carbon rod surrounded by a mixture | | of carbon and manganese dioxide. The negative electrode is made of zinc.

Chemistry plays an | | important role in the discovery and understanding of materials contained in these and many other | | common household items. Things like household cleaners and water purification systems are vitally| | dependent on chemistry. Without chemistry something as simple as scrubbing a toilet without fear | | of severe burns or small explosions might not be possible. | | Next, though it isn't widely known, chemistry is also heavily involved with the manufacturing of | | things such as makeup and soap. Each time you bathe you are witnessing chemistry at work. | | Chemicals such as cetyl alcohol and propylene glycol are typical ingredients in the soap used to | | wash your hair and skin. Without chemistry, these materials (or combinations of these materials) | | might be hazardous or might not exist. The chemical coloring agents used in makeup and nail | | polish would not be possible without an understanding of the chemicals

involved. | | | Almost anything you do during the course of a normal day involves chemistry in some way.

The gas | | | and tires in cars we drive, the makeup we put on our faces, the soaps and cleaners used everyday, | | | burning wood or other fossil fuels, chemistry is all around you each and every day. The | | | associations are practically limitless. So, as you go about your daily activities, remember to | | | thank chemistry. As my teacher always says, remember, “ CHEMISTRY IS LIFE! ” | | | How to Cite this Page | | | MLA Citation: | | |” The Importance of Chemistry in Daily Life. ” 123HelpMe. com. 26 Nov 2011 | | |. | | Related Searches Chemistry Daily Water Purification Makeup Batteries Items Everyday Life Coloring Tires Alarm Keywords: Top of Form [pic] Bottom of Form Bacteria need para-aminobenzoic acid to make a vitamin called folic acid to grow, and as the structure of sulfanilamide is similar to para-aminobenzoic acid, the bacteria can't distinguish between the two chemicals. The bacteria take in the sulfa drug instead of the para-aminobenzoic acid and die.

Luckily, humans don't need para-aminobenzoic acid to make folic acid so they are unaffected by sulfa drugs. Compounds related to sulfanilamide were tested: sulfapyridine was effective against pneumonia and sulfathiazole saved the lives of many wounded soldiers during World War II. There are many contributions made by chemistry that deal with our lives. The simple health and hygiene of a human, in particular, consisted of many hours of hard and dedicated work and research by chemists. The purification of our water by chlorination, dental cleanliness by toothpaste, the sterilisation of a

cut, the control of disease by aspirin, and the cure of disease by chemotherapy have all contributed to our livelihood and our health.

Whenever we drink tap water, brush our teeth, dress a wound, have an aspirin for our headache or drink medicine we are using these contributions made by chemistry. Without these contributions, we would not be living in the clean and healthy lifestyle that we live in today. BIBLIOGRAPHY Merlin Internet [http. //www. amcal. com](http://www.amcal.com) World Book Encyclopedia Volume 13 M pp. 299-306 George W. Beadle Chemistry 2000 Chapter 22 – Health & Hygiene pp. 367-378 R. J. Stanley Encarta '95 Electronic Encyclopedia Medicine C. D. O'Malley