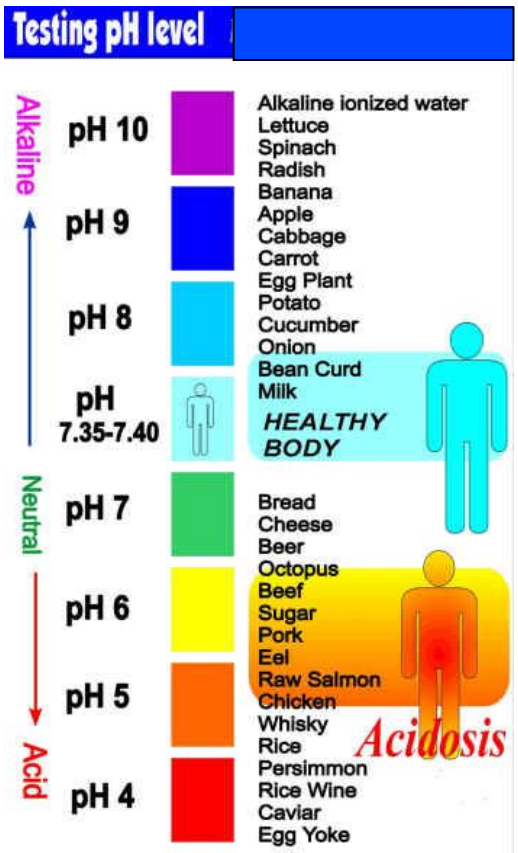
pH SECRET TO GOOD HEALTH

Have you ever noticed how either you, or someone you know is just not feeling so well (although not clinically diagnosed as having a particular disease or illness), but they just don't know what the problem is? Well, many times it's as a direct result of their body being too acidic. Although you may not realize it, your body pH levels have a lot to do with your overall health. Our normal body pH level is 7.356 on the pH scale, thus slightly alkaline. We have a better shot at long-term health if our body's pH is neutral or slightly alkaline. Since most of the body is liquid, the pH level has profound effects on body chemistry, health and disease. Our body's pH management regulates breathing, circulation, digestion, elimination, hormone production and immune defense.



Body pH levels are affected by a variety of factors. most important factor is diet. Because foods have different pH levels, eating them can have a significant impact on body pH levels. Food consumption in our most advanced and developing countries has changed from nutritious raw foods to highly processed foods low in nutritional value. All of these changes have put even greater stresses on our body's innate ability to affect the chemistry of our body fluids

Many people nowadays suffer from the over-acidification of their body, also known as **acidosis**. Low-grade acidosis increases insulin resistance, the hallmark of diabetes. It increases the risk of kidney stones and kidney failure.

The first major line of defense against sickness, disease and aging is the pH of your blood. Even your immune system will not work properly if your blood is even slightly acidic. Remember, the aging process, accelerated by acidic waste in your body, takes its toll every single day. By preventing this continuous accumulation of acidic waste in your bodies, we can in fact help to slow the aging process. As our bodies becomes acidic, our pH level drops. When this happens, we start losing calcium out of the blood, the bones, and the tissues as a safety mechanism to protect ourselves. Now, your body's oxygen level also begins to drop, leaving you tired and fatigued(your immune system is compromised), allowing fungus, mold, parasites, bad bacteria, and viral infections to flourish and gain a hold throughout the body.

improving an out-of-balance pH will improve your health. It is, therefore, vitally important that there is a proper ratio between acid and alkaline foods in the diet. The natural ratio in a normal healthy diet is approximately 4 to 1 -- four parts alkaline to one part acid, or 80% to 20%. When such an ideal ratio is maintained, the body has a strong resistance against disease. In the healing of disease, when the patient usually has acidosis, the higher the ratio of alkaline elements in the diet, the faster will be the recovery. Alkalis neutralize the acids. Therefore in the treatment of most diseases it is important that the patient's diet includes plenty of alkaline-ash foods to offset the effects of acid-forming foods and leave a safe margin of alkalinity.You'd be amazed to find how your body will rejuvenate itself and have wonderful energy when you get your pH back in balance.

F.R.Hassan

Chemistry Special Part II

WHY DO ONIONS MAKE YOU CRY ?

No more tears? Try chilling your onion before cutting it…!

Unless you've avoided cooking, you've probably cut up an onion and experienced the burning and tearing you get from the vapors. When you cut an onion, you break cells, releasing their contents. Amino acid sulfoxides form sulfenic acids. Enzymes that were kept separate now are free to mix with the sulfenic acids to produce propanethiol S-oxide, a volatile sulfur compound that wafts upward toward your eyes. This gas reacts with the water in your tears to form sulfuric acid. The sulfuric acid burns, stimulating your eyes to release more tears to wash the irritant away.

Cooking the onion inactivates the enzyme, so while the smell of cooked onions may be strong, it doesn't burn your eyes. Aside from wearing safety goggles or running

a fan, you can keep from crying by refrigerating your onion before cutting it which slows reactions and changes the chemistry inside the onion or by cutting the onion under water.

Susith Fernando

Chemistry Special Part II

BEST COMPLIMENTS

FROM

LAKMINI MILK BAR

SHORT EATS, BEVERAGES,LUNCH

NO.63, SRI SORATHA MAWATHA, GANGODAWILA,

NUGEGODA.

BEST WISHES

FROM

RAMUDI FOOD CENTRE

No: 109,

Sri Soratha Mawatha,

Gangodawila,

Nugegoda.

WHAT IS GREEN CHEMISTRY ?

Green Chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. Often referred to as a form of molecular- level pollution prevention, Green Chemistry relies on a set of **12 principles** that can be used to design or re-design molecules, materials and chemical transformations to be safer for human health and the environment.The 12 principles governing the study of green chemistry were developed by Paul Anastas and John C. Warner in 1998.

Twelve Principles of Green Chemistry

1. **Prevention**
   It is better to prevent waste than to treat or clean up waste after it has been created.

2. **Atom Economy**
   Synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product.

3. **Less Hazardous Chemical Syntheses**
   Wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment.

4. **Designing Safer Chemicals**
   Chemical products should be designed to effect their desired function while minimizing their toxicity.
5. **Safer Solvents and Auxiliaries**
   The use of auxiliary substances (e.g., solvents, separation agents, etc.) should be made unnecessary wherever possible and innocuous when used.
6. **Design for Energy Efficiency**
   Energy requirements of chemical processes should be recognized for their environmental and economic impacts and should be minimized. If possible, synthetic methods should be conducted at ambient temperature and pressure.
7. **Use of Renewable Feedstocks**
   A raw material or feedstock should be renewable rather than depleting whenever technically and economically practicable.
8. **Reduce Derivatives**
   Unnecessary derivatization (use of blocking groups, protection/ deprotection, temporary modification of physical/chemical processes) should be minimized or avoided if possible, because such steps require additional reagents and can generate waste.
9. **Catalysis**
   Catalytic reagents (as selective as possible) are superior to stoichiometric reagents.
10. **Design for Degradation**
    Chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment
11. **Real-time analysis for Pollution Prevention**
    Analytical methodologies need to be further developed to allow for real-time, in-process monitoring and control prior to the formation of hazardous substances.
12. **Inherently Safer Chemistry for Accident Prevention**
    Substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.

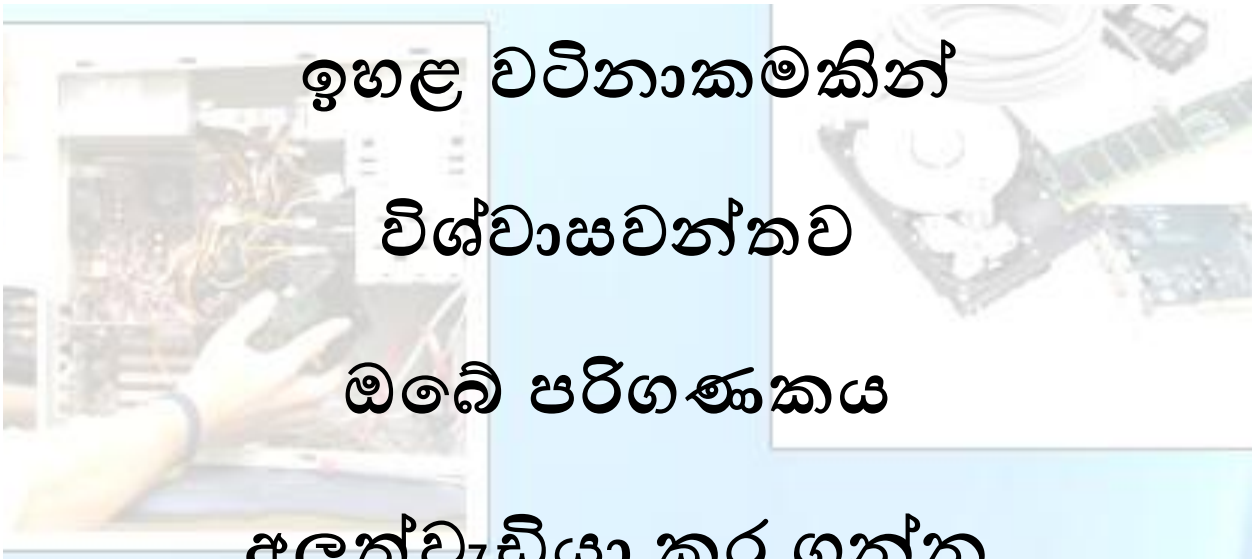
Green chemistry technologies provide a number of benefits, including:

- reduced waste, eliminating costly end-of-the-pipe treatments
- safer products
- reduced use of energy and resources
- improved competitiveness of chemical manufacturers and their customers.

W. K. C. Boteju

Chemistry Special Part II

A group of organic molecules were having a party, when a group of robbers broke into the room and stole all of the guest's joules. A tall, strong man, armed with a machine gun came into the room and killed the robbers one by one. The guests were very grateful to this man, and they wanted to know who he was. He replied: My name is BOND, Covalent Bond.



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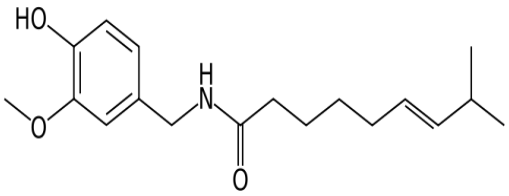
Gangodavila, Nugegoda.

Tel: 0112803668, 0115010543

E-mail: pccenterpvtltd@gmail.com

WHAT MAKES BURNING SENSATION OF CHILI PEPPERS ?

The chemical compound capsaicin (8-methyl-*N*-vanillyl-6-nonenamide) is the active component of chili peppers, which are plants belonging to the genus *Capsicum*. It is an irritant for mammals, including humans, and produces a sensation of burning in any tissue with which it comes into contact. Capsaicin and several related compounds are called capsaicinoids and are produced as a secondary metabolite by chili peppers, probably as deterrents against herbivores. Pure capsaicin is a hydrophobic, colorless, odorless, and crystalline to waxy compound.



Capsin- 8-methyl-*N*-vanillyl-6-nonenamide

Capsaicin is the main capsaicinoid in chili peppers, followed by dihydrocapsaicin. These two compounds are also about twice as potent to the taste and nerves as the minor capsaicinoids nordihydrocapsaicin, homodihydrocapsaicin, and homocapsaicin. Dilute solutions of pure capsaicinoids produced different types of pungency; however, these differences were not noted using solutions that are more concentrated.

Capsaicin is believed to be synthesized in the interlocular septa of chili peppers by addition of a branched-chain fatty acid to vanillylamine. Biosynthesis depends on the gene *AT3*, which resides at the *pun1* locus, and which encodes a putative acyltransferase.

Capsaicin is present in large quantities in the placental tissue, which holds the seeds, the internal membranes, and to a lesser extent in the other fleshy parts of the fruits of plants in the genus *Capsicum*. Despite popular belief, the seeds do not produce any capsaicin. Unlike many such fruits which have evolved to aid in seed dispersal by attracting animals, which consume the fruits and swallow the seeds, which pass through the digestive tract and are subsequently deposited elsewhere, the seeds of *Capsicum* plants are predominantly dispersed by birds, in which capsaicin has analgesic properties rather than acting as an irritant. Chili pepper seeds consumed by birds pass through the digestive tract unharmed, whereas those consumed by mammals do not germinate at all. The presence of capsaicin in the fruits therefore protects them from being consumed by mammals.

Because of the burning sensation caused by capsaicin when it comes in contact with human mucous membranes as found in the eye or the mouth, it is commonly used in food products to give them added spice or "heat" (piquancy). The degree of heat found within a food is measured on the Scoville scale. Typically, the capsaicin is obtained from chili peppers. Hot sauce is an example of a product customarily containing large amounts of capsaicin and may contain chili peppers or pure capsaicin.

The most effective way to relieve the burning sensation it causes is to cool the mouth and throat with dairy food or drink. In addition, the mechanical stimulation of the mouth by chewing food will partially mask the pain sensation.

Cooling and mechanical stimulation are the only proven methods to relieve the pain, however many questionable tips are widely perpetuated, including oil and oily food (probably because capsaicin in its pure state is poorly soluble in water but soluble in oil). However, the burning sensation will slowly fade away without any measure taken. Milk has been recommended, but no stringent data for this advice is available.

K.G.S. Madushi

Chemistry special part II

WHY DOES N_2O MAKE US LAUGH ??

Nitrous oxide is commonly known as laughing gas, and it is a chemical compound with the formula N_2O. At room temperature, it is a colourless non-flammable gas, with a slightly sweet odor and taste.

N_2O is used in surgery and dentistry for its anesthetic and analgesic effects. Nitrous oxide produces anesthesia by an unknown mechanism. It is known as "laughing gas" due to the euphoric effects of inhaling it, a property that has led to its recreational use as a dissociative hallucinogen.

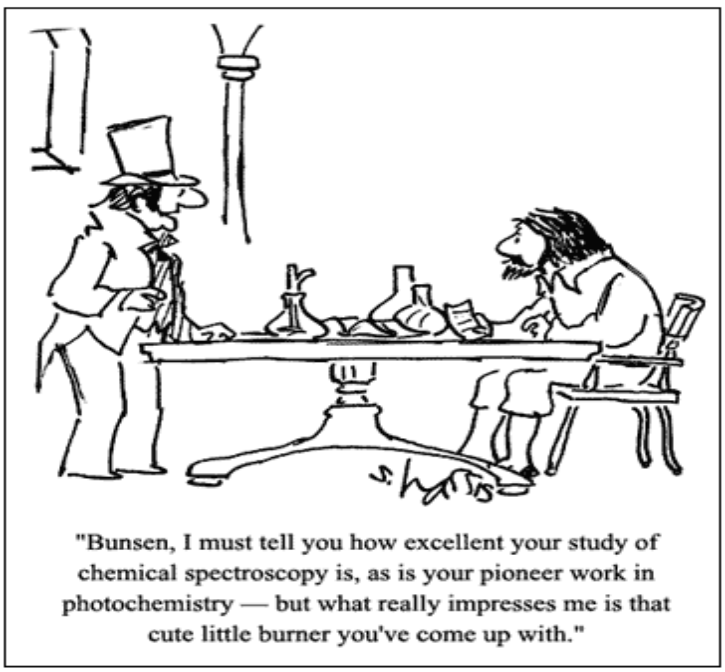
It is thought that N_2O blocks a particular type of receptor in the brain. The chemical released from one cell in the brain to another cell is called a neurotransmitter and the type of neurotransmitter that causes excitation of the target cell is mostly glutamate in our brains. Well most studies in animals show that N_2O blocks that type of receptor (i.e. glutamate receptors). One of the glutamate receptors in our brain is called a NMDA receptor.
In the vertebrate nervous system, N2O has been found to inhibit NMDA and non-NMDA type glutamate receptors, but less effectively. The behavioral and genetic data implicate NMDA receptors as the molecular target for nitrous oxide.

Scientists guess that N2O blocks some communications in the brain and lets other areas go unchecked or uncontrolled. Maybe laughing and showing emotions is controlled in a different part of our brain so when other places in our brain "go to sleep" by N_2O the laughing/emotion center takes over.

V.L Ukwattage

Chemistry special part I I

Source: Madsci network (Internet)



Best Wishes

From

W.A.N.S Weerasuriya

INGREDIENTS OF THE SHAMPOO AND THEIR ACTIVITIES IN SHAMPOO

Sodium lauryl ether sulfate

- The main anionic detergent in the shampoo.
- Less harsh surfactant.
- Cleansing component in the shampoo.

Cocamide DEA

- used as a foaming agent, to make the lather.
- The other surfactants will generate a certain amount of suds,
  but this foaming agent is added to get the amount just right.

Tetrasodium EDTA

- used to sequester the calcium and magnesium from the detergent,
- while keeping them soluble, so they rinse away without scum

Cocamidopropyl betaine

- It is thicker than the other ingredients, so it can be added to make the mix have the right viscosity.
- It has anti-static properties
- It has antibiotic properties that can prevent spoiling of the shampoo.

Methyl Parabane

- As a preservative component.

Propyl Parabane

- As a preservative component.

M.M.R.S. Marasinghe

Chemistry special part II

With best complements from

G.U. Chandrasiri

871/2A,

Athurugiriya Road,

Homagama

FINAL YEAR STUDENTS RESEARCH TOPICS

Name of the student	Supervisor	Research Topic
D. Abeysinghe	Prof. P.P.M. Jayaweera	Insitu transesterification of fatty acid methyl esters to produce Biodiesel as an alternative fuel for diesel engines.
U.L. Jayasundara	Dr. C.D. Jayaweera	UV – light enhanced dissolution of iron from ilmenite in acidic medium.
W.M.K. Lakdusinghe	Dr. C. Mahathanthila	Chemical investigation and evaluation of antioxidant activity of Sauropus androgynus, a green leafy vegetable used in Sri Lanka
R.K.D. Madusha	Dr. C.D. Jayaweera	Analysis of king coconut water for major elements, trace elements and amino acids
G.S. Peiris	Prof. P.P.M. Jayaweera	Photo reactions of aqueous Fe^{2+} ions on TiO_2 nano surfaces.
P.V.S. Priyadarshani	Dr. B.A. Perera	Comparison of migration of organic compounds from plastic bottles to food.
J.R.A.L. Perera	Prof. A.M. Abeysekera	Study of comparative reaction rates of components of pinene rich fraction of nutmeg oil.
M.D.W. Samaranayake	Dr. L. Karunanayake	Studies on synthesis, characterization & ion exchange of Ranawara (Cassia auriculata) tannin based phenol formaldehyde resins.
O.M.M. Sandamali	Dr. L. Karunanayake Dr. M.N.S. Kottegoda	Layered materials for slow release drug formulation.
I.A.N.D.P. Thilakaratne	Prof. P.P.M. Jayaweera	Adsorption & desorption studies of Alizarin Red from Ag/ TiO_2 Coated plates.
J.G.P.S. Ubesena	Dr. B.A. Perera	Toxicochemical analysis of arsenic in broiler chicken; implications for human risk assessment.
K.A.K.D. Wijesekera	Dr. L.M.K. Tillakaratne	Comparison of action of nanofillers against conventional fillers on the physical properties of dipped products.
F.S. Zavahir	Prof. S.S.L.W. Liyanage	Determination of hazardous constituents present in commercially available thinners used in paint industry.
S.P.S. Atapattu	Dr. L.M.K. Tillakaratne	Comparison of the quality of rubber products made using normal filler & nano filler.
N.A.S.K. Gunasekera	Dr. S.D.M. Chinthaka	Determination of lead in toys available in Sri Lankan Market.
M. Lakdusinghe	Dr. C. Mahathanthila	Chemical investigation and comparison of *Desmodium triflurum* and *D. heterophyllum*
D.S.S. Liyanage	Prof. A.M. Abeysekera	Determination of octanol/water partition coefficient of some pharmacological active alkaloids
G.W.C.S. Perera	Dr. S.D.M. Chinthaka	Development of low cost solid phase microextraction device for head phase analysis.
G.R.S.S. Thilakaratne	Prof. S.S.L.W. Liyanage	Quality improvement of Natural rubber latex through introduction of zinc hydroxide and fumed silica.
E.B. Tillekeratne	Dr. L. Karunanayake	Investigation of the use of Talc as filler for thermoplastics and properties of the composite material.


VESAK LANTERN
COMPETITION
Chem Soc
Department of Chemistry

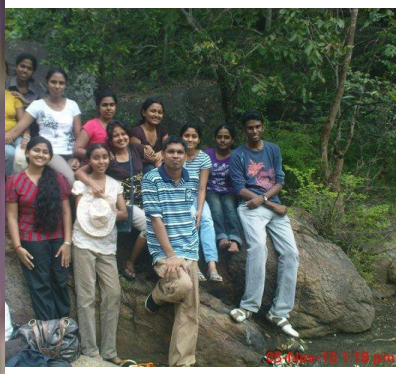
ANNUAL

OUTIING

We want you all to be there for

the next trip.....

Join with us.....



ANNUAL CRICKET MATCH

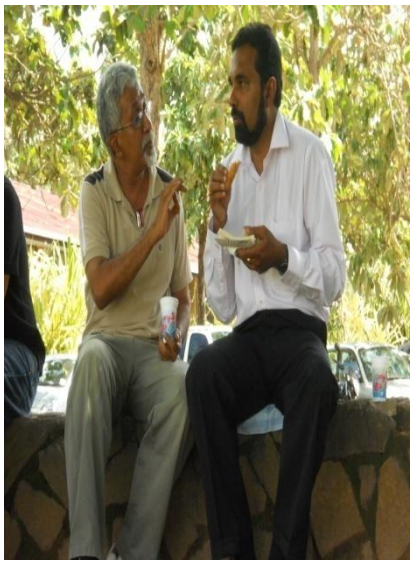













Whiskey Worms

A chemistry teacher one day decided to teach his class about the dangers of alcohol.

He thought up a neat little experiment, and showed it to his class.

He had two glass tumblers, one filled with clean water, and the other with whiskey. He placed a live worm in each glass. The worm in water was perfectly fine, however the worm which was dropped in whiskey died almost instantly.

Rather pleased with the experiment, he decided to ask the class what they could deduce from it. The class were silent for several seconds, until one boy at the back called out: "Drink whiskey and you won't get worms!"

Q: What is the name of the molecule CH_2O?
A: Seawater

A neutron walks into a restaurant and orders a couple of cokes. As she is about to leave, she asks the waiter how much she owes.

The waiter replies, "For you, No Charge!!!"

Two atoms are walking down the street.
Says one atom to the other, "Hey! I think I lost an electron!"
The other says, "Are you sure??"
"Yes, I'm positive!"

Special Thanks……

- **To all those companies, institutes, post graduate programmes and persons who contributed to the crucible by providing us with advertisements.**
- **To all the authors who furnished the Crucible with miscellaneous articles.**
- **A very special word of thanks goes to Sasanka Ubesena(President), Dileka Abeysinghe(secretary) and Susith Fernando (Junior treasurer) for the enormous help towards completion of the crucible.**
- **To all the students in Chemistry Special (part II) batch for their support in collecting the advertisements and articles.**
- **To all in the academic and non academic staff for lending a helpful hand whenever possible.**
- **To the press.**