Wednesday the 27th of July 2016

Daily News

Vidya

The Official Newspaper of the
Ministry of Science, Technology and Research

ITI-produced Dialysate Solution to Peradeniya Teaching Hospital

W.A.S. Nisansala Kumari

As a treatment for kidney patients, the blood of such patients is purified with a solution of pure water, electrolytes and salts called a Dialysate Solution and a large amount of money has to be spent to purchase such electrolytes and salts from other countries. Successfully providing a solution to that problem, the Industrial Technology Institute (ITI) has created a Dialysate Solution that can be used in dialysis.

The celebration of sending this Dialysate Solution created by the ITI under the Ministry of Science, Technology and Research to clinical trials was held on the 21st of this month at the Main Auditorium of the ITI at this celebration, this Dialysate Solution was handed over to the Senior Advisor of the Kidney Disease Unit of the Teaching Hospital, Kandy by the Chairman of the ITI Niroshana Perera.

A workshop edifying participants of methodologies of preventing environmentally banned trade was also held in parallel to this celebration to mark the World Environment Day. Former Deputy Director of Customs Samantha Gunasekera delivered a special lecture at this workshop.

A large gathering including Doctors Rathnayake, Samantha Gunasekera and Thilak Abeysekera of the Teaching Hospital, Peradeniya, ITI Chairman Niroshana Perera, Director General G.A.S. Premakumara, Dr. Radhika Samarasekera, A.S. Pannila, K.A.S.T. Kaluarachchi, W.R.R. Fonseka, Manori Wijemanna and M. N. A. Mubharak and Officers of the Tri - Forces participated in this celebration and workshop.

ITI Chairman Niroshana Perera presenting Dialysate Solution to Dr. Thilak Abeysekera of Kandy Teaching Hospital

Pictures by Gayan Pushpika

Iran help to confirm fuel quality

The Minister of Science, Technology and Research Susil Premajayantha met The Ambassador of the Islamic Republic of Iran in Colombo, Mohammad Zaeri Amirani and Iran's Representative on Science, Technology and Research Prof. Zeid Mohomed Reza Kaleeli at the Ministry Office recently and at that meeting the Government of Iran expressed its agreement to provide laboratory facilities including oil quality standardization equipment to Sri Lanka. At this meeting, the Minister expressed his willingness to provide the necessary infrastructure facilities to establish these laboratory facilities in the Industrial Technology Institute under the Ministry of Science, Technology and Research.

With the establishment of these facilities, a marked increase in quality can be expected in oil and related products in Sri Lanka and this will be of immense use to eradicate the losses to the consumers of this country by sub-standard oil and allied products. Furthermore, this laboratory will give the benefit of importing oil of the correct standards to this country and it is expected that this will be an immense backing to avoid the economic losses caused by importing sub-standard oil and other allied products.

Picture by Sankha Waliwita

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47 Years after Humans Landed On Moon

The 47th anniversary of humans landing on the moon fell on 20th July 2016. This article is to mark that momentous occasion.

Humans stepped on an extraterrestrial body for the first time on 20th July 1969. On that day, Neil Armstrong stepped on the surface of the moon from Apollo 11 Lunar Lander "Eagle." That is written in the annals of history as the most important incident of the last Millennium. Edwin Aldrin and Michael Collins joined Neil Armstrong on this historic journey which was launched from Kennedy Space Center, California and ended by reaching Southwestern Hawaii Islands in the Pacific Ocean on 24th of July at 12.51 pm.

Exploring moon's deolodical features

Spaceflights Apollo 11, 12, 13, 14, 15, 16 and 17 were manned spaceflights that reached the moon and they brought back 4 Kilogrammes of lunar material to earth. 12 astronauts stepped on the surface of the moon in these spaceflights. A Sri Lankan scientist, Dr. Cyril Ponnamperuma, was fortunate to seek life in this lunar material. Another good fortune for Sri Lankans was that he was the Founder Director of the Arthur C. Clarke Centre. The last manned spaceflight to moon was Apollo 17. The astronauts were able to drive for 35 Kilometers on the moon's surface and on that space trip Geologist Harrison Schmitt examined the geological features of the moon.

Unmanned space flights

That was the last space mission to the moon and after that, in 1994, the unmanned spaceflight Clementine conducted research on North and South Poles of the moon. Clementine also investigated the gravity data of the moon.
On 25th October 2008, India also sent a spacecraft to the moon named Chandrayaan 1 with the objective of obtaining 3D photographs of the moon. Even though moon exploration has been carried thus far, still a vast amount of information about the moon remains still hidden. The moon is considered as the best natural laboratory to experiment on the birth of the earth. That is the reason the moon is so important for us.
Explorations on the moon have revealed that there are no water or wind on the sun and large craters are still being created by meteor strikes, and that large caters created as results of exploding volcanoes are still existing on the surface of the moon and furthermore it had been proved that high and low tides result from the influence of the moon.

Second man to walk on the moon

The second man to walk on the moon, Edwin Aldrin, came to Sri Lanka to visit Sir Arthur C. Clarke in 2001 and there were inquiries made of the moon landing on that occasion. Are humans landing on the moon a hoax? How can the American Flag flutter in the moon's windless environment? Is the whole moon landing story something filmed in a set on earth? were some of the questions asked. But, Edwin Aldrin replied that the moon landing was a truth and not a hoax and out of the over 1,000 people who played parts in this, at least one person will reveal that it was a hoax. He further said that the American Flag was fluttering because it was fitted with a steel cross bar and the flag was made to flutter by pulling and releasing it by hand.

Human habitations on the moon

Earth spins around its axis, just as a top spins around its spindle. This spinning movement is called Earth's rotation. At the same time that the Earth spins on its axis, it also orbits, or revolves around the Sun. This movement is called revolution. Eclipses of the sun, the moon and various changes can be observed from time to time because of these motions and various gravitational relationships. The gravity of the moon is about one-sixth of the gravity of the earth. Because of this, today's scientists are thinking seriously of establishing human habitations on the moon. Accordingly, even at present, experiments are ongoing such as constructing cubicles conducive to human habitation, placing them on the moon and getting people to live in those cubicles.

A space station

Plans have been made to establish a space station on the moon and later broaden it to eatablishing human habitations. The Director General of the European Space Agency Prof. Johann-Dietrich Wörner has said that this International Space Agency will cost £ 75 million and it will be constructed in the year 2024. At present, a camera capable of observing the final destination on the moon located 2,38,900 miles away for the earth costing about US $ 400 has been invented.
During the Apollo 11 mission, the live radio broadcast in English was brought to Sri Lankans by Sir Arthur C. Clarke and its Sinhala translation was done by veteran media personality Edwin Ariyadasa. The science writer Anura C. Perera wrote a book on the Apollo 11 mission and three copies of his book titled "Handata Giya Apooru Gamana" was presented to the three astronauts.

NASA's gratitude

NASA sent a letter of thanks to the group headed by Anura C. Perers and copies of that letter are on display at the Colombo Public Library. The share of lunar material presented to Dr. Cyril Ponnamperuma who tested those materials was on display along with the Sri Lankan flag that was taken to the moon and brought back are on display at National Museum, Colombo. When those items were exhibited for the first time in the third week of December 1969, it was reported that the pilot of the lunar module Neil Armstrong who was on his way to Hong Kong spent a few hours at the Katunayake Airport. Accordingly, it can be expressed proudly that the day people establish habitations on the moon is not very far away. Then, the elderly and the disabled who have no control over their bodies could live on the moon without any difficulty. Let us count the days till we achieve this objective.

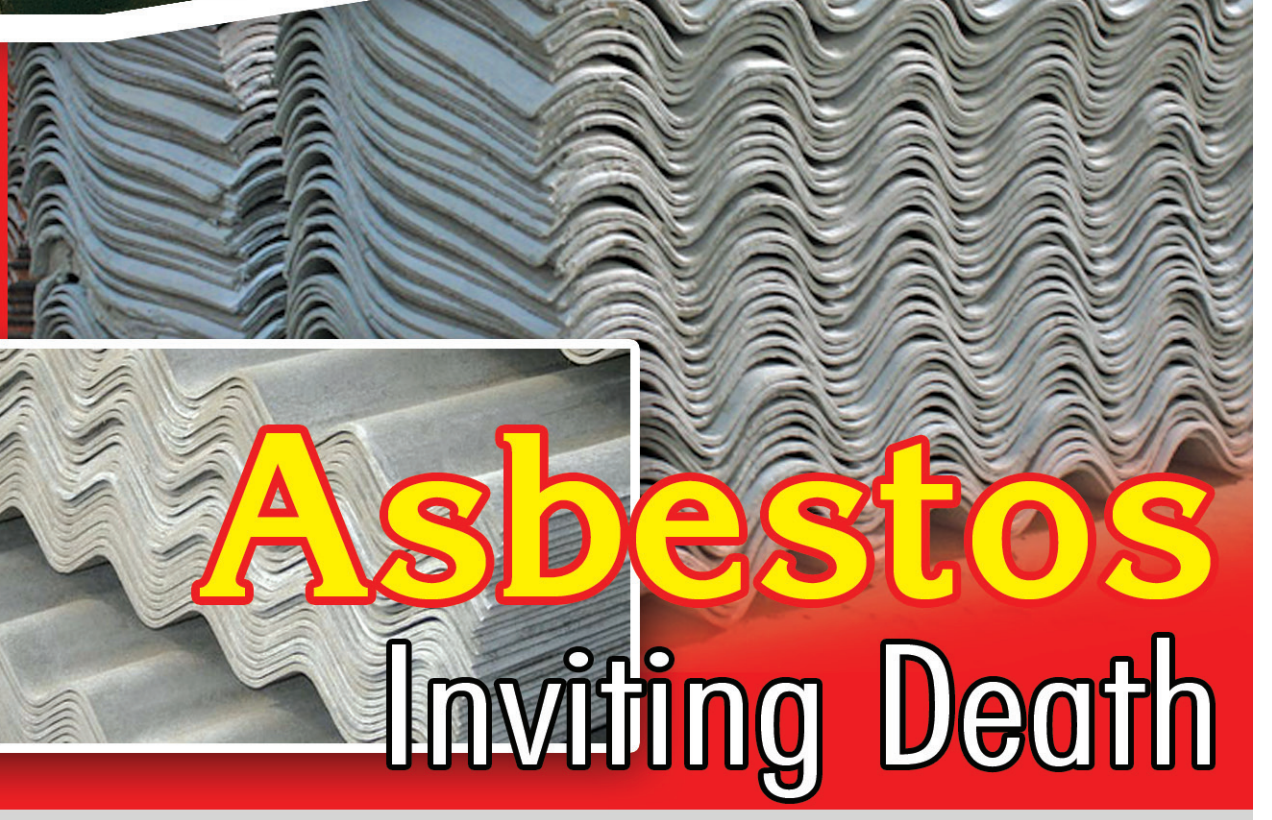
Chinthana Wijayawardena
Arthur C. Clarke Institute for modern technology

Sustainable Development Goals of Sri Lankan forests comes to world attention

A special Meeting of Heads of State for World Forest Week organized by the Food and Agriculture Organization of the United Nations in Rome, Italy, from 17th to 19th July. At that meeting, Sustainable Development Goals and Millennium Development Goals and the proposed themes of the 2015 Paris Climate Conference held last April, "Completely stopping fossil fuel burning by 2050" and "Avoiding global warming and climate change were broadly discussed.

More attention was paid to Sri Lanka at this meeting because Dry Zone and Wet Zone special ecosystems naturally exist in the country and the Minister of Science, Technology and Research Susil Premajayantha made the keynote address on behalf of President Maithripala Sirisena.

This compendious address, most important to the whole population of the world, will appear in the next issue of 'Vidya'…



Asbestos Inviting Death

Asbestos is a natural mineral and exists in the environment in fiber form. This occurs in many shapes and white, blue or brown in colour. Asbestos fibers are resistant to heat, fire and chemical reactions and do not conduct electricity. Furthermore, asbestos is long-lasting. Asbestos is used in many industries due to these qualities.

Roofing sheets, floor tiles and ceiling raw material are some asbestos products. Other than these, asbestos is used in the manufacture of auto parts, water tanks and septic tanks. Because of its fire-resistant quality asbestos is generally used for covering. Out of these, the asbestos used to cover pipes is very injurious to health. Furthermore, it is used in building ships, battle tanks, airplanes, trucks and in various constructions of the military sector.

The annual production of asbestos in the world exceeds two million metric tons and according to the reports of the World Health Organization about 43,000 deaths occur annually because of its use. Even though over 50 countries of the world have banned the use of asbestos, the problem of finding a substitute for it has arisen.

The permanent solution to escape the damages caused by asbestos is removing asbestos products completely but, if it is not carried out properly, asbestos fibers can escape to the environment. If there are broken pieces of asbestos around the house or garden, touching them should be avoided at all costs. Striking or rubbing pieces of asbestos or subjecting them to shocks or exposing them to the wind can make asbestos fibers escape. So, the harm caused could be minimized by avoiding touching the pieces and not going to the place they are laying. If such pieces are accidently touched by hand, the hands must be washed immediately. If the asbestos pieces have to be removed, it is always better to wear gloves. Children should be never entrusted with such work and if there is powdered asbestos around, an essential protective step is refraining from using vacuum.

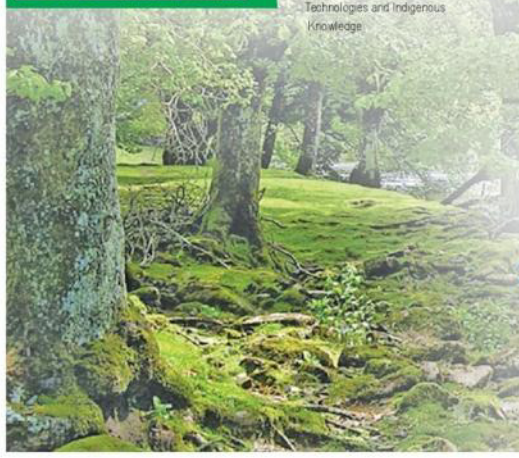
Do not ever put asbestos into refuse bins at home. Take the advice of people in the know to identify asbestos in your home. If asbestos products are intact there is no harm and examine them for damages from time to time.

Some diseases caused by asbestos are lung cancer, mesothelioma cancer, asbestosis and thickening of lung tissue. In addition, sneezing, cough, increase in body weight, general debility and chest pains can result from exposure to asbestos.

So, people must be edified on avoiding damages caused by asbestos, other than making use of asbestos.

(Source – various publications)

M. Priyanka Siriwardana
Science and Technology Officer
Balapitiya



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National Research and Development Framework (NRDF)

Forward thinking for Sri Lanka

Research and Development (R&D) activities have a tremendous potential in economic development of any country and in enhancing the living standards of its people, if used appropriately. Many countries in the west as well as countries such as Japan, Korea and China in the far-east have made remarkable achievements in development through appropriate R&D activities. With this in mind, the National Science and Technology Commission (NASTEC), an advisory body to the Government on S&T policies, plans and strategies, has developed a National Research and Development Framework (NRDF) for Sri Lanka to harness the potential of R&D activities in national development. This was done in collaboration with the Ministry of Science, Technology and Research, and with the participation of a large number of scientists, academics and other relevant stakeholders.

The NRDF, which has recently been approved by the Cabinet of Ministers, has identified 10 areas to focus on for improving the quality of life of people and enhancing economic development of the country. These areas consist of;

i) Water,
ii) Food, Agriculture and Nutrition,
iii) Health,
iv) Shelter,
v) Environment,
vi) Energy,
vii) Mineral Resources,
viii) Textile & Apparel industry,
ix) Software and Knowledge Services, and
x) Basic Sciences, Emerging Technologies and Indigenous Knowledge.

The first five areas are more relevant to quality of life while the last five areas contribute more towards economic development. Under each area it has identified several issues that affect the quality of life and slow down the economic progress of the country. R&D needs to solve these issues have also been identified under these focus areas. Appropriate mechanisms to fulfill the R&D needs have been identified under 10 major interventions;

i) Policy formulation,
ii) Pure and applied research,
iii) Promotion of innovation,
iv) Application of Nanotechnology,
v) Application of biotechnology,
vi) Application of indigenous knowledge,
vii) Testing, standardization, accreditation and assurance of Intellectual Property Rights,
viii) Capacity building,
ix) Application of Information Communication Technology, and
x) Science popularization and awareness creation.

Given below is a brief insight into the areas considered under the NRDF.

Water

Water is a basic and essential requirement of all living beings and a prime requirement in agriculture and other economic activities such as industries and hydro-power generation. Some of the major issues identified under this focus area are; absence of measures in meeting drinking water demand, adverse impacts of droughts and other climate changes on water resources, depletion of water sources due to urbanization, deforestation etc., and deterioration of water quality due to soil erosion, industrial and agricultural pollution.

Food, Nutrition and Agriculture

The agriculture sector contributes 11% to the GDP of Sri Lanka, while generating 30% of the employment within the country as per the recent statistics. However, this sector has many issues, high cost of production, labour shortages, poor soil and water management, inefficient market systems etc. When it comes to food and nutrition several issues such as insufficient attention on food safety and risk assessment, lack of awareness on proper nutrition, misleading advertisements etc have been identified.

Health

Sri Lanka performs well above other South Asian countries in the health sector in terms of indicators such as low infant and maternal mortality rates and high life expectancy at birth. All the achievements have been made with a relatively low per capita expenditure on health. Nevertheless, the health sector is facing many issues. Non communicable diseases such as diabetes, heart disease, hypertension, cancers are on the rise. They negatively affect country's labour population too. Management of newly emergent diseases such as Dengue requires significant portion of health budget as well as time and effort. Use of novel techniques in vector control, understanding disease prevalence and transmission needs more attention. The potential of using indigenous knowledge in disease curing and preventing has not been tapped properly.

Shelter

"Access to shelter" has been declared as one of the basic human rights by the United Nations Organization. However, in Sri Lanka 'Shelter for all' is yet to be achieved. Some pressing issues identified are; inadequacy of suitable lands for housing, inadequate guidelines in planning Human settlements and lack of access to housing by low income groups due to high cost. Shelter should be considered as an essential component of human settlement programmes, integrated with social and physical infrastructure. The ultimate objective in 'shelter for all' should be to enhance health, wellbeing and productivity of people that will contribute to increase the GDP of the country in the long run.

Environment

In today's rapidly developing world it is essential to pay attention on sustainable use of environment if we are to achieve socio-economic development. The NRDF has identified several issues related to Environment sector under five major themes; i) Mitigation of climate changes and adaptation to adverse effects, ii) natural and man-made disasters, iii) Conservation of biodiversity and rehabilitation of degraded ecosystems, iv) Prevention of industrial/ agricultural pollution and waste management, and v) use of environment sustainable technologies. Under these themes several issues such as lack of appropriate technologies for climate change adaptation, threats to biodiversity due to land degradation, pollution, deforestation etc. unplanned urbanization and deficiencies in waste management have been identified.

Energy

Energy is the main driver of development in the modern world. Ever increasing demand for energy and the rapidly depleting energy resources create major barriers for the development process. The NRDF focuses on use of renewable energy for electricity development and in transport sector, optimization of national electricity infrastructure, energy conservation in domestic, industrial and commercial sectors, development of effective energy storage systems and many more approaches to meet the energy demand. Some major issues identified are; inadequate exploitation of renewable energy resources and technologies, heavy dependency on biomass in the rural sector and on imported fossil fuel in the transport sector, use of energy-inefficient household appliances, machinery and processes in industries.

Mineral Resources

Mineral-based industries have a significant potential to contribute to the economy of Sri Lanka. We do not have sufficient information on mineral resources available in our country. Therefore, there is a need to conduct geophysical and geochemical surveys covering the whole country including its exclusive economic zone of the ocean to discover mineral resources, including oil and gas. So far we have not given sufficient attention to product development using available mineral resources. Exporting of minerals in the raw form should be discouraged and the country should consider development of value-added products for export purpose. This will fetch more export earnings to the country.

Textile and Apparel Industry

The apparel industry is the leading manufacturing industry in Sri Lanka and it has become the main export earner of the country. In 2014 Textile and Apparel industry alone contributed 44.3% (US $ 4,930 Million) to total export earnings of the country. However, this sector is facing number of challenges at present. They include; increasing labour cost, lack of branding and consumer awareness, long product development process, high water and energy use, trade barriers and strict environmental and safety regulations etc.

Information Communication Technology and Knowledge Services

ICT and knowledge services are two fast growing sectors in the world. This has a huge potential of generating employment for youth in the country. To make maximum use of the opportunity, these sectors should pay attention to several issues such as insufficient labour force, lack of relevant policies, and lack of knowledge on emerging trends in ICT. There is a need to have some encouragement from the government in terms of tax concessions, developing cost-effective infrastructure, creating awareness on opportunities available in bioinformatics, portfolio analysis, on-line legal services etc.

Basic sciences, Emerging Technologies and Indigenous Knowledge

Most of the modern technologies we use today have originated from basic sciences. Therefore, any country should have its own basic science – based research infrastructure and personnel to conduct research in basic sciences. Sri Lanka needs to pay more attention on emerging technologies such as space technology that plays an important role in weather forecasting and telecommunication. It is also necessary to exploit our rich repository of indigenous knowledge.

This knowledge can be used in irrigation and water management, environmentally friendly agriculture, medicine, and even in civil engineering.

Major Interventions

Along with the above 10 areas the NRDF has identified more than 450 mechanisms that can be applied to address the issues in those areas. These mechanisms are categorized under 10 major interventions.

1) Formulation of policies and regulations
2) Pure and applied research
3) Promotion of innovations
4) Applications of nanotechnology
5) Application of biotechnology
6) Application of indigenous knowledge
7) Testing, standardization & accreditation and assurance of Intellectual property Rights (IPR)
8) Capacity building
9) Application of Information and Communication technologies (ICT)
10) Science popularization and awareness creation

It is expected that this framework will provide useful guidance for researchers in planning their R&D activities based on needs of the country. This will be useful for policy makers, administrators and other relevant decision makers also in planning development work.

If properly implemented, the interventions proposed will contribute to; solving major issues discussed above, increasing living standards of people in our country and enhancing its economic development.

In the long run this will take the country towards sustainable development, while becoming a scientifically and technologically advanced nation.

The full document of NRDF can be downloaded from www.nastec.lk website.

Asha Pitadeniya
Senior Scientist
National Science and Technology Commission

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Energy Conservation

On many occasions, we discuss about energy conservation. The attention of all people is directed towards energy conservation especially in times of increase of electricity bills and in drought conditions when power generation becomes difficult. When energy conservation is discussed, top priority is given to the conservation of household electricity as, compared to day time, more electricity has to generated between 6.00 pm and 10.00 PM as a lot of household work is attended to during these hours and it directly influences our lives.

It is true that conserving of household energy directly influences our economy. Considering our country in general, even though we are supplied with electricity, another lot of Sri Lankans cannot be supplied with electricity. One of the main reasons of this is that the electricity generated within our country is not sufficient to meet the demand. it should be mentioned here that, if we can save part of the electricity we consume, we can light up another person's life and ease his or her workload. Other than this, in our country, electricity is generated mainly with imported fuel and if we consume more electricity, we have to burn more energy. This will cause our valuable foreign exchange to flow to other countries. Because of this, every unit of electricity we save is not only of benefit to us but also a great service to our brother countrymen and generally to our country.

Methods of wastage of household energy

♦Using more energy than necessary
♦Using energy at unnecessary times
♦Not using modern technical appliances
♦Using inefficient appliances
♦Using efficient appliances inefficiently

♦No proper maintenance
♦Lack of knowledge and personal attitudes

Methods of conserving energy

Using electric lamps

♦Switch off unnecessary electric lamps
♦Use efficient electric lamps
♦When building houses and buildings, plan to utilize the maximum sunlight (natural light)
♦Keep electric lamp shades clean
♦Use strip window covers
♦Use light-coloured paint on walls and light-coloured appliances
♦When using alternate energy sources for lighting purposes, always use the chimney of chimney lamps
♦Keep the chimneys of chimney lamps always clean

Using the refrigerator

♦Never place refrigerators in direct sunlight or close to hot stoves and fires
♦Pack the refrigerator methodically
♦Before opening the refrigerator, decide what you want to take out
♦Keep the condenser coil on the rear of the refrigerator clean and dust-free
♦Inspect the rubber beading of the door to see whether the door is closing properly
♦Never put anything hot in the refrigerator
♦When buying a refrigerator, select one sufficient to your needs
♦Be considerate of the refrigerator's power consumption when selecting
♦Keep frost forming inside the refrigerator to a minimum. If an excessive amount of frost is forming, defrost according to a time table.

Using the television

♦Switch on the television when necessary
♦Never use the television instead of the radio
♦When the television is not in use, switch off the power from the supply plug. Turning off power from the remote control unit is not enough.
♦ When buying a new television, consider its size and power consumption

Using electric fans

♦Select the fan fitting your necessity (ceiling, table etc.) when buying electric fans
♦Use regulators
♦Use efficient electric fans
♦Install the fan at correct height
♦Control operating fans unnecessarily
♦Be considerate of the electric fan's power consumption when buying a fan
♦Design houses so as to be cooled naturally

When cooking

♦Whenever possible, limit cooking with electricity
♦Clean the burners of gas cookers often
♦When using gas, keep the flame below the bottom of the pan not allowing the flame to touch the pan
♦Use pots and pans with flat bottoms when cooking with electricity or gas
♦Use economical stoves when using firewood.

Boiling water

♦It is more economical to use another fuel (gas, firewood) than electricity when boiling water
♦When using electricity to boil water, automatic electric kettles are more suitable
♦Hot plates are more efficient in boiling water
♦Boil only the required amount of water
♦Use a thermos flask to keep the leftover hot water
♦The kettle is more suitable when using other fuels such as firewood and gas

Washing and ironing cloths

♦When loading the washing machine, load according to its capacity
♦Whenever possible, dry cloths in sun light (makes cloths easier to be ironed)
♦Iron more cloths at a time
♦Iron thick cloths first and thin material last
♦Electric steam iron is more suitable

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The Official Newspaper of the Ministry of Science, Technology and Research

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For the first time

Sinhala-English Offline SCIENCE GLOSSARY MOBILE APP

National Institute of Fundamental Studies (NIFS), Kandy, working under the Ministry of Science, Technology and Research has launched a unique project under the Science Education & Dissemination Unit (SEDU) which develops Mobile Apps for Science Students (MASS). The aim of this e-project is to facilitate students to learn science more easily while enjoying.

The second mobile app of these projects has been named as "Sinhala-English Science Glossary." This glossary mobile app contains glossaries that are available at www.vidumanpetha.com the first ever Sinhala web hosted by SEDU, NIFS and Science related glossaries available at the official web page of the Department of Official Languages.

In this Sinhala-English Science Glossary App, more than 90,000 words which cover all science disciplines such as Agriculture, Botany, Education, IT, Mathematics, Physics, Statistics, Chemistry, Geology, Library Science, Molecular Biology, Geo Science, Computer Science, Nursing and Zoology are included.

Special Features:

- Can search in both Sinhala and English (No need to install Sinhala fonts in the mobile)
- Can use while working off-line
- There are word predictions to search quickly.
- Can look at recently searched words easily.
- Can create your own list of favorite words.
- Can copy and share words in the glossary.

You can download this mobile app by following this link

https://play.google.com/store/apps/details?id=virajekanayake.com.sciencerays.apps.

sinhalascienceglossary&hl=en or by scanning the above QR code.

Pradeep Piyathilaka,
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Be beautiful without being sick

We all like to be beautiful. And we all like to preserve our youth. Almost all persons living in the world are very interested in preserving bodily beauty. At present, its prevalence is growing further.

The field of beauty culture has become a wave of much magnitude, embraced by all persons young and old, men and women irrespective of differences.

But, we should never forget that we have inherited a sick society. Not only the food and beverages and medicines we consume but also the cloths and ornaments we wear have become reasons for that. The child being born today and the child who will be born tomorrow have become prey to diseases such as cancer and heart diseases. When considering the beauty culture field, we get to hear of cancer and related diseases very often. But, it is a problem whether we act with understanding of its dangers. We are ever ready to pay any amount of money and purchase any product claiming to prevent skin wrinkles, provide long, black hair or a clear, beautiful complexion.

This has become an enormous problem. But, today, we have the involuntary responsibility of finding out how healthy the beauty culture products we use are. Many beauty culture products are based on chemical compounds that are not healthy. Realizing this, we have to purchase beauty culture products of world-recognized standards.

In this light, it is important that the Beauty Culture Analytical Laboratory of the Industrial Technology Institute has been established as the first laboratory in Sri Lanka to obtain the ISO 17025 (SLAB - Srilanka Accreditation Board) standards certificate from the world-recognized Sri Lanka Standards Institution (SLSI). This laboratory tests beauty culture products chemically and microbiologically. Not only the beauty culture products produced in Sri Lanka but also the products imported to the country are analyzed. This provides a great backing for consumer protection and to the manufacturer to issue his products to market without hindrance. Specially in distributing products to the overseas market, if those products are not conforming to accepted standards, it can cause them to be rejected. But, in issuing products to the market through the Standardization Certificate issued through the Industrial Technology Institute through world-recognized analytical methods will prevent the products from being analyzed again and again and from being rejected. At present, over 30 beauty culture products are being analyzed using 40 methods of analysis. Furthermore, over 15 products have secured standardization. Analysis is being carried out on external applications, varieties of cream, varieties of shaving cream, oils applied on the head, varieties of soap and cosmetics, powder and tooth-paste. Going for correct and healthy beauty culture products through products with standardization certificates issued by a recognized superior State institution is our responsibility and the need of the era.

Special thanks to :
Manori Wijemanne
Ruvini Dasanayake
Industrial Technology Institute

W.A. Nisansala Kumari
***Pictures* – Niroshan Batepola**

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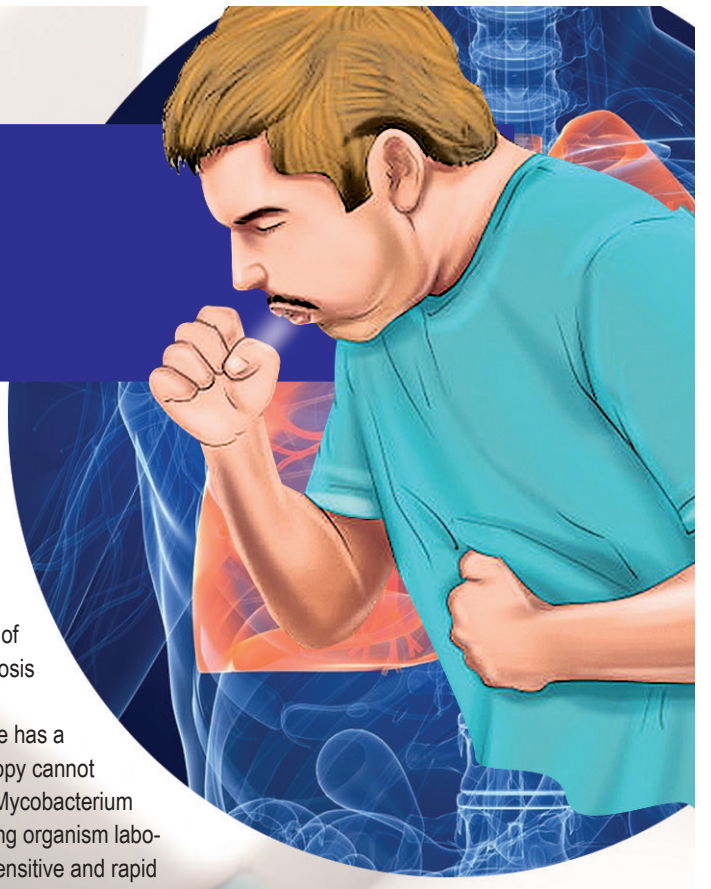
Diagnosing Tuberculosis



Tuberculosis is a bacterial disease caused by organisms belonging to Mycobacterium tuberculosis complex, mostly affecting the human lungs. It remains one of the major unresolved global health problem causing high mortality & morbidity with eight million new Tuberculosis cases and two to three million deaths annually.

Drug resistance is a major barrier in curing this disease. Multi Drug Resistant Tuberculosis is a specific type of Tuberculosis infection. It means that the organism which a person is infected with is resistant to at least two of the most important anti Tuberculosis drugs, isoniazid and rifampin. If bacteria are resistant to certain Tuberculosis drugs that means those drugs won't work with the particular patient and the diseased person would not get cured. Such alternative drugs should be prescribed to the person if they are to be cured of their Multi Drug Resistant Tuberculosis.

It is difficult to diagnose Tuberculosis by a person's symptoms. To a definitive diagnosis evidence of Mycobacterium tuberculosis bacterium in the patient's sample is a necessity. Some of the tests used for diagnosis look directly for the mycobacterium organism. Others such as the chest X-ray look for the effect of the bacteria on the person suspected of having Tuberculosis.

Diagnosis of Tuberculosis in most developing and underdeveloped countries relies on the direct microscopic examination of patients' sputum specimens which is low in sensitivity.

Generally isolation and identification of the Mycobacterium tuberculosis organism is performed by culturing the specimens on solid media. Major problem with this technique is that the time taken for the growth (two to eight weeks) of the Mycobacterium tuberculosis bacterium.

Direct microscopic technique has a variable sensitivity. Microscopy cannot identify drug resistance.As Mycobacterium tuberculosis is a slow growing organism laboratories have to use more sensitive and rapid methods to diagnose and identify the Mycobacterium tuberculosis bacterium to start early anti Tuberculosis treatment.

The best method to speed up the process is the use of molecular techniques; specifically PCR testing. katG & inhA are two genes that mediate isoniazid resistance of Mycobacterium tuberculosis.Rifampin resistance can occur due to mutations on the rpoB gene.

Dr.D.N. Maganaarachchi, a Senior Research Fellow, National Institute of Fundamental Studies, Kandy invented a new technique. This enables rapid simultaneous detection of M. tuberculosisalong with RIF or INH resistance of the organism. This was done with the collaboration of Dr. Dushyantha Madegedara, Consultant Physician, Respiratory Unit of the Teaching Hospital, Kandy.

It is done by detecting rpoB, inhA and katG gene sequences of M. tuberculosis bacteria if present in a biological sample within three days. This invention describes themultiplex PCR assay process which includes amplifying the rpob, inha and katg gene sequences in a nucleic acid mixture which contains specific disclosed primer sequences. Using a multiple assay process, amplified sequences can be detected. This invention can detect mutations related to drug resistance within a specific region of related genes.

When comparing to conventional methods for Tuberculosis diagnosis, this inventive assay is more accurate, informative and faster. This discovery has been given the patent license in 2015 and the ultimate aim of the researches is to encourageinitiating appropriate treatments for Tuberculosis patients faster than what is practiced in present.

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Is plastic harmful to health?

The base source of plastic is petroleum. According to composition, there are several varieties of plastic.

1. PET/PETE – Polyethylene terephthalate (Classification Number - #1)
2. HDPE – High Density Polyethylene - (Classification Number- #2)
3. PVC – Polyvinyl Chloride – (Classification Number - #3)
4. LDPE – Low Density Polyethylene – (Classification Number #4)
5. PP – Polyethylene (Classification Number #5)
6. PS – Polyethylene (Classification Number #6)
7. Polyethylene Plastic (Classification Number #7)

Out of these, HDPE, LDPE and PP are the plastic varieties approved internationally for food packaging.

Harmful chemicals in plastic itself and added to give various physical and chemical qualities are generally called Plasticizers. With time, Plasticizers leach into food packaged in plastic containers. Heat, oils and alcohol acts as a catalyst in this process. It has been discovered that PET bottles leach about 19 harmful chemicals. Out of those, it has been found out that the chemical compounds given below have most harmful effects on human health.

1. Pthalates
2. Bisphenol A
3. Antimony
4. Various aldehydes including acetaldehyde

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Printed & Published by The Associated Newspapers of Ceylon Ltd., at No.35, D.R. Wijewardene Mawatha, Colombo 10 on Wednesday, July 27, 2016