JSA Newsletter

Jaffna Science Association, Jaffna, Sri Lanka

Volume 24 Issue 2

In this Issue :

Jaffna Science Association is registered as a voluntary services, Non-Governmental Organization at the District Secretariat

Registration Number :
JA/GA/P/CA/28

Date of Registration:
20th November 08

JSA Office Address:
84, College Road, Neeraviyadi,
Jaffna, Sri Lanka.

Web
http: //www.thejsa.org

e-Mail
thejsaorg@gmail.com

e-Mail of President
president@thejsa.org

e-Mail of General Secretary
sec@thejsa.org

Facebook fan-page
www.facebook.com/thejsa

Compiled and edited by
Dr. (Miss.) Shivatharsiny. Rasalingam
Chief Editor/JSA

..... From Editor's pen

Greetings All:

Welcome to our second newsletter for 2016-17. This news-letter also provides me with a chance to reflect on what the Association has been able to achieve in second quarter of this year 2016-17. Thanks to those of you who contributed to it as these contribution are essential to the newsletter's success.

First of all I would like to Congratulations to the team from section A, who have participated in the successful program on water scarcity in Analaitheevu. As members of the JSA we all very proud of your achievements, and we hope to hear more good news along these lines.

In this Newsletter, we have included an article entitled "Ozone Layer Depletion" by Dr. R. Srikaran, Senior Lecturer, Department of Chemistry, University of Jaffna, and I would like to thank him for his article, which is very clear and in simple form. In particular, this article is very useful to the school students as well. This newsletter also carry some portraits from the Section A activities at Analaitheevu. Further, the details of the newly joined life members from Section A and D, and the newspaper articles published by section A are given in this issue.

As your newsletter editor, I welcome your articles, photographs and input to help keep the newsletter and website entertaining and informative. Please send your information to: srtharsha12@gmail.com

Thank you.

Shiva Rasalingam
The Chief-Editor/JSA

The JSA

The JSA was established in 1991 by the founder President late Prof. A. Thurairajah

Would you like to contribute to your Community?

Need an appropriate platform for executing your ideas?

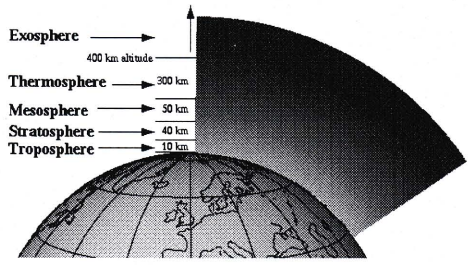
Become a LIFE MEMBER of JSA today!

The primary objectives of the JSA are dissemination of scientific knowledge among the intellectuals in Jaffna region, encouraging national as well as regional research studies and presenting them in the Jaffna society, and advancement of scientific knowledge among the secondary school students and at the undergraduate level.

Ozone Layer Depletion

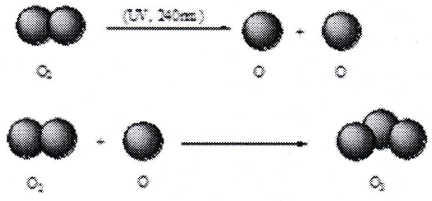
Dr. R. Srikaran,
Senior Lecturer, Department of Chemistry, University of Jaffna

The atmosphere above the earth is divided into five layers -Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.



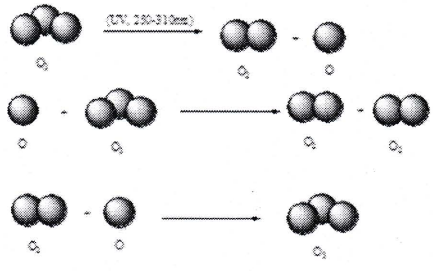
The layers of the atmosphere above the earth

Ozone layer is found in the Stratosphere. The ozone gas (O_3) is formed by the combination of three oxygen (O) atoms. Oxygen is a colorless gas. When the UV rays (less than 240 nm wavelength) penetrate through the oxygen molecule (O_2), the oxygen molecule dissociates into two oxygen atoms. This process is known as photo dissociation.
When these O atoms combine with the O_2 molecule, the O_3 is formed.



Ozone formation from atmospheric oxygen

When O_3 molecule absorbs UV rays within the range of 250-310 nm wave length, it dissociates to form O_2 molecule and O atom. The O atom will then rejoin with the O_2 molecule and the O_3 molecule will be created again. This process will continue until one O atom rejoin with O_3 molecule to form two O_2 molecules. Therefore the formation and the destruction of ozone in the atmosphere exists in dynamic equilibrium.



Dynamic equilibrium of ozone in the atmosphere

The ozone layer absorbs the harmful UV radiation from the sun and thus retard the UV rays reaching the surface of earth. The animals and plants are therefore protected from the harmful UV radiation.

The ozone layer is gradually deteriorating due to various factors. Various chemicals reach atmosphere due to several human activities. The Chloro Fluoro Carbons (CFC) are the prime chemicals for the depletion of ozone layer. Chloro fluro carbons mainly contain Carbon (C), Chlorine (Cl) and Fluorine (F). Few examples for CFCs are $CFCl_3$ (CFC-11), CF_2Cl_2 (CFC-12), $C_2F_3Cl_3$ (CFC-113), $C_2F_4Cl_2$ (CFC-114) and C_2F_5Cl (CFC-115). Early days these compounds were used in refrigerators due to their inert nature and thermal insulation. UV radiation causes photo dissociation in CFCs and as a result the highly reactive chlorine free radical will be released into the atmosphere.

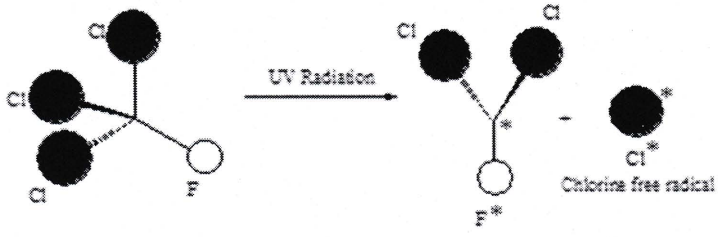
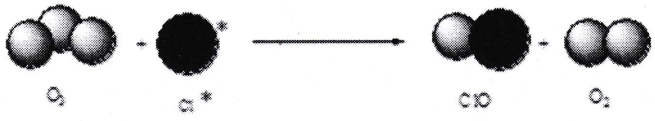


Photo dissociation of Chloro Fluoro Carbon

As chlorine free radical reacts with the O_3 molecule to form ClO molecule and O_2 molecule, the ozone layer get destroyed.



Destruction of ozone by chlorine free radical

The ClO molecule reacts with the O atom and the chlorine free radical will be generated again.

Reformation of chlorine free radical

Therefore in the atmosphere, the chlorine free radicals are regenerated again and again. One single chlorine free radical can destroy more than thousands of O_3 molecules. The ozone layer depletion not only has adverse effects in plants and animals but also in microorganisms. Ultimately it will affect the entire ecosystem.
In 1974, the scientists, Rowland and Mario Molina initiated the research in ozone layer depletion caused by CFCs. Even though at earlier stages, they encountered many protests from other scientists, in 1996 Mario Molina was awarded Nobel Prize for his findings in CFCs.

Sections of JSA

Section A :
For Pure Sciences

Section B :
For Applied Sciences

Section C :
For Medical Sciences

Section D :
For Social Sciences

Activities of JSA

Organize annual School Science programmes

Organize annual conference on a timely topic

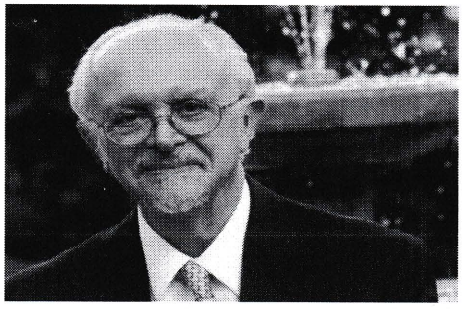
JSA Sectional Activities

Arrange popular talks to update people with present happenings

Organize workshops to empower people

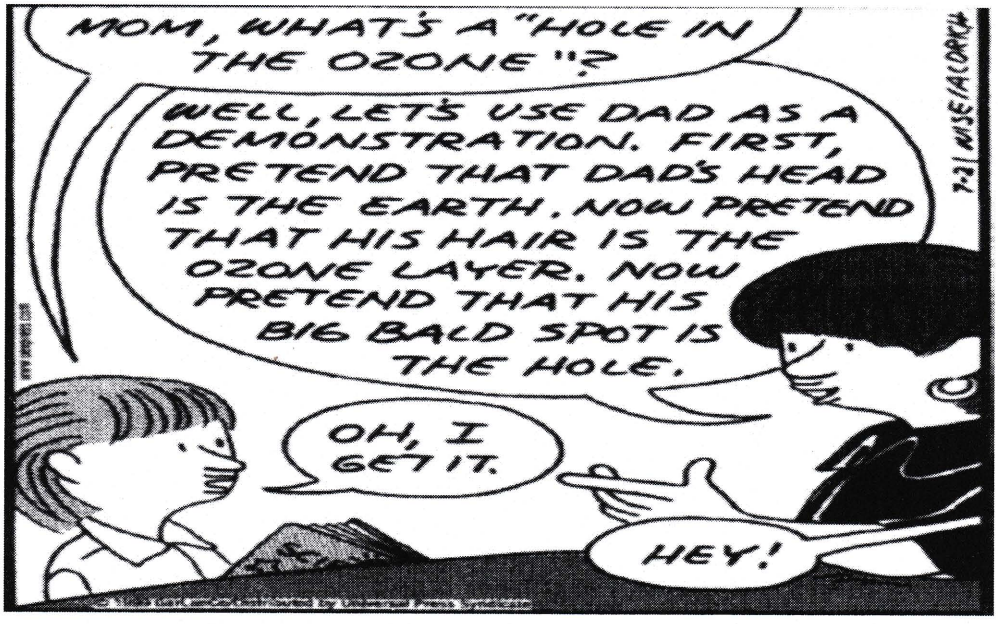
Publish a magazine called '***Pirayoga Vingnana Sudar***' and Newspaper articles to disseminate knowledge

Mario Molina – the Noble Prize winner (1996)



Most of the countries realized that the depletion of ozone layer should be minimized. In 1988, approximately 45 countries signed the "Montreal Protocol" to control the depletion of ozone layer. Even though many protocols were established later on, still the CFCs already exist in the atmosphere are depleting the ozone layer. Therefore the usage of CFCs should be completely stopped and also other substances which cause ozone layer depletion should also be prevented from reaching atmosphere.

If the ozone layer continuously depleting, then the UV rays will reach the surface of earth and consequently all the plants and animals will die ultimately. Moreover the Snow Mountains in Antarctica may start to m melt and this will lead to tremendous adverse effects on earth.



Jaffna Science Association - Life Members – 2016

Section A

1. Miss. J. Akimsa
2. Miss. S. Tharsika
3. Miss. S. Vanurahini
4. Mr. P. S. S. L. Pinnawala
5. Mr. S. Ehanathan
6. Mrs. P. Selvaratnam
7. Mr. N. Selvanatharajah
8. Mr. A. Thabesan
9. Miss. R. Fathima Rifla

Section A cont.

10. Miss. M. Nishanthy
11. Dr. R. Prashanthan

Section D

1. Mr. A. Mugunthan
2. Miss. S. N. Jeevan Suganya
3. Mr. N. Sivakanthan
4. Mr. N. Umakanth
5. Dr. (Mrs.) Y. Veeramankai

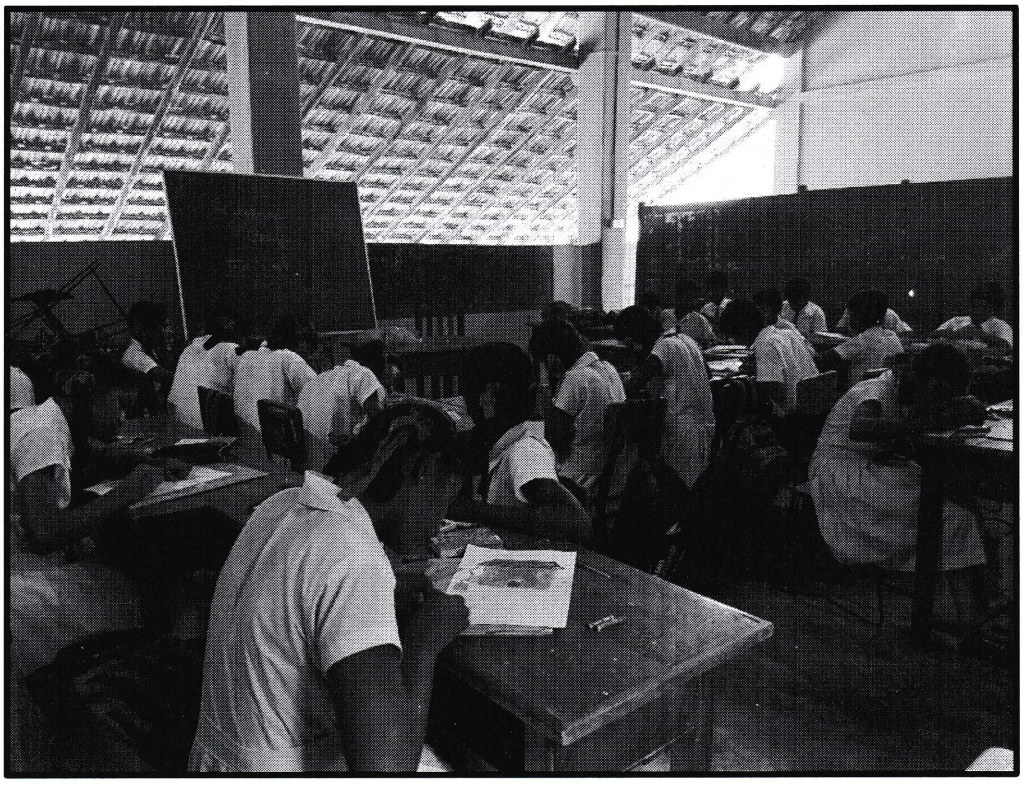
Sectional Activities

JSA: Section A organized a School Awareness Programme On Water scarcity at Analaitheevu

Students during the workshop

Dr. P. Iyngaran, the Chairperson, Section A

Students during their group activities



Students during their poster competition

During grading the quiz paper

The resource persons along with the sponsors, members of Lions club, Chankanai

Details of News Paper Article published by JSA-Section A in Valampurii		
Date	**Title**	**Author / Affiliation**
05-08-2016	கல்சியம் காபனேற்றுக் கனிமம்: இருக்கை முதல் பயன்கள் வரை	ச. வனுறாகினி, Demonstrator, இரசாயனவியற்றுறைஇ யாழ். பல்கலைக் கழகம்
19-08-2016	பொய் பேசும் போது கூட உண்மை பேசும் நமது உடல் மொழி	காலிங்கராசா ஹரிச்சந்திரா, தொழில் நுட்ப அலுவலர், மீன்பிடியியல் விஞ்ஞானத்துறை, யாழ். பல்கலைக் கழகம்
02-09-2016	பொய் பேசும் போது கூட உண்மை பேசும் நமது உடல் மொழி (தொடர்ச்சி)	காலிங்கராசா ஹரிச்சந்திரா, தொழில் நுட்ப அலுவலர், மீன்பிடியியல் விஞ்ஞானத்துறை, யாழ். பல்கலைக் கழகம்
16-09-2016	செயற்கை முறையில் தாவர இனப்பெருக்கம்	ஸ்ரீ. ஜஸ்மிகா தரம் 11 யாழ் உடுப்பிட்டி மகளீர் கல்லூரி வல்வெட்டித்துறை
30-09-2016	ஆரோக்கியத்தின் முதலீடு சிரிப்பு	காலிங்கராசா ஹரிச்சந்திரா, தொழில் நுட்ப அலுவலர், மீன்பிடியியல் விஞ்ஞானத்துறை, யாழ். பல்கலைக் கழகம்
14-10-2016	காலநிலை மாற்றமும் உணவு உற்பத்தியும்	ஜெ. அகிம்சா, Demonstrator, இரசாயனவியற்றுறை, யாழ். பல்கலைக் கழகம்
28-10-2016	காலநிலை மாற்றமும் உணவு உற்பத்தியும் (தொடர்ச்சி)	ஜெ. அகிம்சா, Demonstrator, இரசாயனவியற்றுறை, யாழ். பல்கலைக் கழகம்

Please send your comments, suggestions, and articles for the next issue to Dr. (Miss.) S. Rasalingam, Chief Editor/JSA, Department of Chemistry, University