



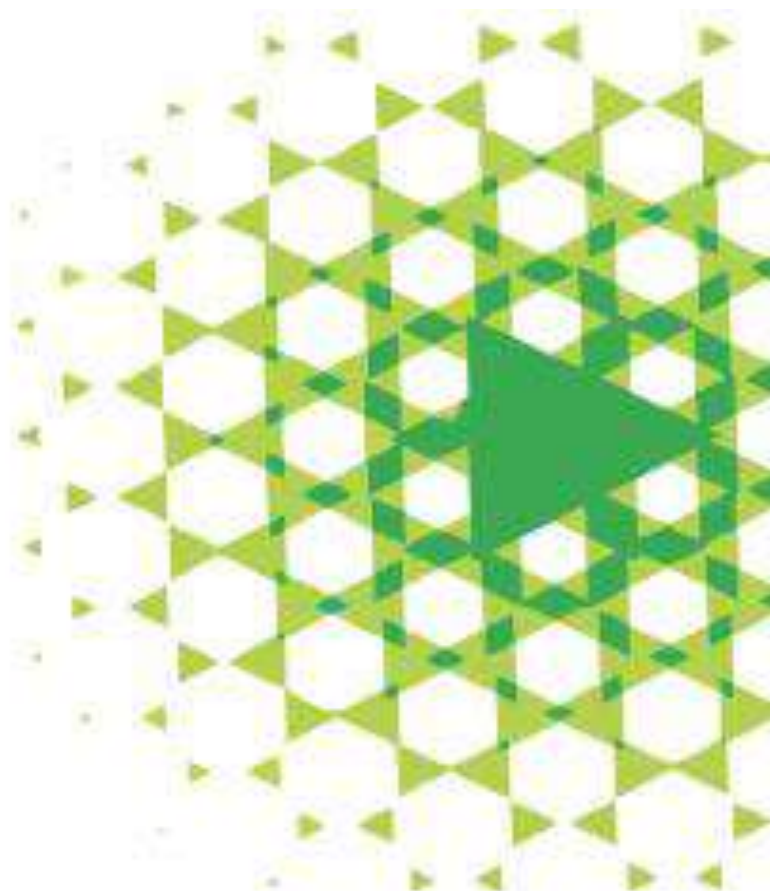
Awareness and Capacity Building Workshop

Chemistry & Environment

Activity Based Learning for Science Teachers in Schools

World Earth Day 2023

PROCEEDINGS



April 24-25, 2023

Organized by

Climate Change Research Institute







Climate Change Research Institute

Awareness and Capacity Building Workshop

Chemistry & Environment

**Activity Based Learning for Science Teachers in
Schools**

World Earth Day 2023

held on

April 24-25, 2023 at India International Centre, New Delhi

PROCEEDINGS

Jointly with
Royal Society of Chemistry, India Office
And India International Center

Climate Change Research Institute
World Earth Day 2023

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Annexure 1: List of the participating schools in the World Earth Day Event

Annexure 2: List of confirm nominations received

Annexure 3: List of participants

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Climate Change Research Institute

World Earth Day 2023 Science Campaign and Activity Based Learning for Schools Teachers' in Chemistry & Environment

April 24-25, 2023 India International Center, Delhi

Executive Summary

Dr. (Mrs) Malti Goel, President Climate Change Research Institute in association with the India International Centre and the Royal Society of Chemistry organized **World Earth Day 2023** Science Campaign and Activity Based Learning Workshop for School Teachers on **April 24th – 25th, 2023** in the Seminar Hall 1, 2, 3 and the Lecture Hall – I. In total 40 School teachers and students from fourteen schools participated.

World Earth Day 2023

The event began with lamp lighting on 24th April 2023 at 10:00 AM. Sh. Gautam Sen, Member GC, CCRI, gave a welcome address for the programme. Dr. (Mrs) Malti Goel introduced the theme of the World Earth Day 2023 as '**Invest in our Planet**' and described ways to invest for saving the planet. This was followed by a detailed presentation by Dr. Sunita Kumari Chaurasia, Asst. Prof. DSUE, Rajokri Campus, Govt. of NCT of Delhi, on 'Climate & Earth' explaining the need for caring for our planet. Chief Guest Prof. D.P. Agrawal, Former Chairman, UPSC, Founder Director IITM, Gwalior, delivered the **Inaugural Address** and released the e-Magazine of CCRI with the theme '**G20, Environment and Climate Change**'. Guest of Honor Dr. Chintan Vaishnav, Mission Director, Atal Innovation Mission (AIM), Niti Aayog, delivered the **Keynote Address**. He gave insights into the thought process of the genesis of Atal Tinkering Laboratories in 10,000 Schools in India. He shared examples of teaching/ learning practices adopted in MIT, USA. Mrs Vimala Oak, RSC presented vote of thanks.

Activity Based Learning for Schools Teachers' in Chemistry & Environment

Activity Based Learning for Schools Teachers' in Chemistry & Environment was conducted for two days. The resource person Mrs Vimala Oak from Royal Society of Chemistry (RSC) conducted three activity based learning workshops namely;

- (1) Towards Active Learning,
- (2) Chemical Reactions and Equations,
- (3) The Particle Nature of Matter

on 24th April 2023 and 25th April 2023. The Workshop was attended by Science Teachers nominated from 14 different schools in NCR as per programme attached.

Certificates and Potted plants were given to all participating school teachers. India International Centre's excellent conference facilities and catering were appreciated by one and all.

World Earth Day 2023 and Activity Based Learning for Schools Teachers' in Chemistry & Environment

April 24-25, 2023

Venue

- 24-04-2023 Seminar Hall, 1,2,3 Kamaladevi Complex IIC, New Delhi (Entry from Gate No. 3)
25-04-2023 India International Centre **Annexe**, Lecture Hall-1, New Delhi

Programme

24 April 2023

- 09:30-10:00 Hrs. **Registration**
10:00-12:00 Hrs. **Inaugural Session - World Earth Day 2023**
12:00-13:30 Hrs. **Workshop 1 – Moving Towards Active Learning**
13:30-14:15 Hrs. Lunch Break
14:15-17:00 Hrs. **Workshop 1 (cont.) and Workshop 2**

25 April 2023

- 10:00-11:30 Hrs. **Workshop 2 (cont.)**
11:30-13:00 Hrs. **Workshop 3**
13:00-13:45 Hrs. Lunch Break
14:45-16:45 Hrs. **Practical Session**
16:45-17:00 Hrs. Closing Remarks

Awareness and Capacity Building Workshop on “Chemistry and Environment”

&

Activity Based Learning for Science Teachers in Schools on World Earth Day 2023

April 24-25, 2023 at India International Centre, New Delhi

Inaugural Session

Welcome Address



Shri Gautam Sen,
Member GC, CCRI

1. Shri Gautam Sen, the outset said it is my pleasant duty to welcome everybody present here. He welcomed Professor D. P. Agarwal, Chairman CCRI, for his encouragement to Climate Change Research Institute, Dr. Sunita Chaurasia, Asst. Prof. DSEU, Govt. of NCT of Delhi for sharing her thoughts on skill development. He said Mrs. Vimala Oak represent Royal Society of Chemistry and is going to be the main resource person for the two days' workshop. Dr. Malti Goel, President Climate Change Research Institute is the motivating force behind these workshops and she has been taking leadership role in educating masses about scientific solutions for climate change mitigation. She has authored many books.

2. He referred to 'Climate Clock' ticking and said that within six years, we are going to reach global warming of 1.5 degree above the pre-industrial level. It would be disastrous - could lead to much devastation on the planet and therefore this seminar is really very important. He then named the participating schools as below;

- Army Public School
- Birla Vidya Niketan
- Brilliants Convent

- Delhi Police Public School
- Delhi State Science Teacher's Forum
- Govt Girls Secondary School
- Kamal Model Sr. Sec. School
- NP CoEd. Sr. Sec. School
- New Horizen School
- Navyug School, Laxmi Bai Nagar
- Navyug School, Sarojini Nagar
- St. Thomas' Girls Sr. Sec. School
- St. Anthony's Girls Sr. Sec. School
- Universal Public School

From CCRI, we thank all the teachers for participating in this workshop and making this a success. Thank you!

Theme Address



**Dr. (Mrs.) Malti Goel,
President & Chief Executive,
CCRI**

1. Dr. (Mrs) Malti Goel extended warm welcome to distinguished guests, on-the-Dias and off-the-Dias. She profusely thanked Professor D. P. Agrawal, Chairman CCRI for making it convenient on this day despite his other commitments and Mr. Gautam Sen who has been with the ONGC and Reliance, the two prominent institutions in the country and is always willing to help. Thanks to Dr. Sunita Chaurasia who has come all the way from Rajokari Campus for addressing you in this program and Mrs. Vimala Oak who has come from Bangalore and will be conducting this Activity based learning training programme for two days. She said we are glad to see participation from science teachers from different schools. A larger number of school authorities were approached for nominations and we started receiving nominations from March itself (Annexure 2). Our earlier activity based learning workshop was held in June 2019 during the summer vacations. On public demand, we are repeating it this year on the World Earth Day.

2. Earth Day is an annual event held on 22nd April 2022 in campaign mode to show our commitment to environment protection on planet earth. The event is celebrated across the globe in different ways giving the message to care for the planet earth. Every year World Earth Day has a different theme and the theme for this year is “**Invest in Our Planet**”. At Climate Change Research Institute we have been holding science campaigns every year and also investing our resources for environment protection. I take pride in informing that we have had 29 scientific campaign events, since 2013. In every workshop we address different themes relating to key environmental concerns and the technology that could give solution to climate change, Topics like Green Buildings, Solar Rooftop or the Smart Cities have been discussed before national programme emerged on them. We hold ‘Environment and Earth Care’ lecture series by eminent persons sharing their experience and perspectives on very important topics. Our News Bulletin ‘**Climate SAR**’, in short for ‘Climate Science and Research’, has been published to discuss climate impacts on socially relevant topics. During pandemic COVID-19 we worked from home and started e-Magazine as a medium for

dissemination of ideas on climate related issues. She said some of our workshops have led to publication of scientific books for the researchers on environment and climate change. We collaborate with Springer Nature for these publications. (A short video clip of CCRI for SDGs was shown)

3. The Earth Day is a reminder to intensify our actions for sustaining the planet earth. Genesis of the earth day was depleting earth resources and the degradation taking place in the environment from their overuse. Teachers have a major role to create awareness about it among the younger generation at the school level. I would suggest that there can be in-depth tasks assigned to students such as online monitoring of pollution, understanding and quantifying changes taking place in the environment and working towards finding solutions. In response to the theme for 2023 to invest in our planet, some of the ways to invest could be;

- Promoting Clean Renewables and Energy Efficiency
- Increasing Plantation and Managing Agriculture
- Using Clean Transportation
- Avoiding Plastic Use and Pollution
- Protecting Marine Life in Ocean
- Investing in Environment Education
- Going Digital, and
- Many others

4. Dr. (Mrs.) Malti Goel said that climate change is becoming an emergency today requiring an urgent action. All of us should come together and take action, we may do it individually but that is not important. Air pollution is a key problem; we all know that it affects both locally and globally. Locally, it affects health of people and causes changes in eco-system; globally, it is causing the global warming crisis. The global atmosphere is very much interconnected with the earth system comprising of the biosphere (biosphere - plantation led growth), the hydrosphere (hydrosphere – ocean and water bodies), the cryosphere (cryosphere – wherever ice is there) and the lithosphere (lithosphere – solid earth). They undergo changes by accumulation of greenhouse gases; on different time scales. What is happening now in air may happen on the earth after several months, because it is a very slow moving system compared to the atmosphere. Climate change due to various feedbacks is highly complex phenomenon and is resulting in the adverse impacts namely, extreme weather events, heat waves, changes in the agriculture pattern and sea level etc.

5. The CCRI has contributed a book on “**Solar Energy: Made Simple for a Sustainable Future**”, Malti Goel, V.S. Verma, Neha Tripathi, published by **Springer Nature** in the Green Energy and Technology (GREEN) series. The book analyses solar technology developments, with examples of their applications in urban and rural environments in India. The book provides science behind the solar devices for awareness and education to students and teachers, to gain insights into a greater understanding of the potential of solar energy. It

has a chapter on 'International Solar Alliance' discussing international objectives for climate-compatible development. The book must be read by everyone. More details can be seen at <https://link.springer.com/book/10.1007/978-981-19-2099-8>

6. Lastly, India's Presidency of G20, is a huge opportunity for India to play a role in the world order. India's core belief in inclusive growth and progress is inherent in G20 mantra of 'One Earth, One Family, One Future'. The theme of the next issue of our e-Magazine is **G20, Environment and Climate Change**. There are many discussions among the G20 countries about climate change and sustainability. Energy Transition Working Group negotiations and Climate Change are receiving attention as almost three-fourth of GHG global greenhouse gas emissions is contributed by G20 countries. For more details presentation of Dr. Malti Goel can be seen at p. 19 onwards. The link for the presentation: https://drive.google.com/file/d/1_43UBvfRaKShNoXNk66Rs_d5_uC_Wu2u/view?usp=sharing

Dr Malti Goel invited Prof. D.P. Agrawal to kindly Inaugurate the workshop and to release our e-Magazine for January – March 2023 is being released today. Thank you!

Inaugural Address



**Prof. D. P. Agrawal, Former
Chairman, UPSC, Founder
Director IIITM, Gwalior and
Professor & Dean at IIT Delhi**

1. Prof. D.P. Agrawal extended very hearty welcome to all invited guests, eminent teachers from the schools and to the young students. He said we are very happy that all of you could take time to come and participate in today's activity. We are celebrating Earth Day today and we are also working for next two days on how to utilize activity based approach for learning chemistry. Over the years, our institute has made all efforts to propagate the importance of ecology in our life and the importance of science in environment. With the schools and the children, we have had number of programs. There is an understanding that we have to care for the climate, the there is an enthusiasm. Golden words of Mahatma Gandhi should motivate all of us he said, "the world has enough for everyone's need, but not enough for everyone's greed." The earth will continue to full fill everybody's needs, but it will not be fulfil the greed of people. The linkage between the needs of people to live quality of life and to waste resources for their greed has to be understood. It is a duty for all of us that every activity we do at home, we do in a school, we do on the road, we should be concerned that we do not add carbon to the atmosphere.

2. He recalled that in his younger days while energy was a measure for quality of life, saving energy, conserving energy, utilizing energy efficiently has been motto. Giving an example of the Smart City project, he said along with cleanliness, waste management has been a critical issue. It calls to utilize biodegradable materials, shun away from plastics. It is important that whatever you do scientifically, life of billion people must change. He gave an example from the schools in Africa. To ensure that there is awareness about the climate change and quality of life, every day they would change the decoration of the classroom in schools. This is to indicate that some of the important aspects of life do contribute to environment change. This practical example created awareness and has to become an essential approach. We need to have teachers becoming facilitators for students to become lifelong learners. It is observed that time span of students' concentration is diminishing day by day. It used to be 50 minutes in our time. It came down to 30 minutes and I am now told in most of the school it is not even 10 minutes.

3. Prof. Agrawal said that in the New Education Policy (NEP), focus is given on activity. With language learning, student learns the culture, learn the way people behave, learn through cinema, learn through pictures, learn through activity and learn through visits. Accreditation procedure for schools has to be environment friendly, activity friendly and have a lifelong approach. Activity based learning is therefore very important in schools and I am happy that we are doing this programme.

4. He appreciated the 'Climate SAR' Bulletin, brought out by the Climate Change Research Institute and said that it is focusing on different aspects of climate change and a very good example for awareness and education. It makes an important contribution for explaining in a simple language on an e-platform. He suggested that we should devote one page about one school's activity towards the climate change, in the future issues. Focus for schools should be on sustainability, climate change, life-long learning, and freedom. He assured that for anything related to environmental issues to be focused, our institute is with you. We will try to organize one day workshop or lectures on different topics.

Prof D. P. Agrawal released the publication of CCRI on e-Magazine on 'G20, Environment and Climate Change' Vol. 3, Issue 1, January – March 2023.

Guest Lecture



**Dr Sunita Kumari Chaurasia,
Asst. Prof. DSEU, Rajokri
Campus, Govt. of NCT of Delhi**

1. Dr. Sunita Kumari Chaurasia, welcomed all teachers and said it is the first time she is addressing teachers. She said on the planet earth, human beings are most intelligent, most smart, creative and most emotional. Human beings are also most destructive for the environment. All human activities are polluting air, water and land. Greenhouse gas emissions such as carbon dioxide, methane and nitrous oxide are giving rise to global warming. The global temperature has increased by 1.1 degree centigrade from industrial level and it will be 1.5 degree centigrade by 2040. The climate is changing, increasingly glaciers are melting, hurricanes, forest fires, heat waves, floods and sea levels are increasing. She gave an example of the Okjokull glacier in Iceland, which is completely vanished. There is rise in sea level, measured 3.3 mm per year. Many devastating impacts of climate change were described by her, pictorially.

2. The solutions for climate change can be an ideal source of energy, such as hydropower, biomass, wind energy, geothermal, tidal and solar energy. The fossil fuel energy sources may not fulfil our requirement, because of limited size of our planet. The resources are limited; therefore we should limit our consumption. She suggested everyone should follow **three rules** for a better future.

Rule one is to limit our consumption and to avoid uses of earth resources we can reduce the electricity, consumption and this could be one of the solutions.

Second rule is to minimize the energy consumption. It can be done by replacing the old appliances that are not energy efficient, with the energy efficient appliances.

Third rule is to generate remaining energy to meet the needs locally as much as possible by using hydro power and biomass or solar power. With battery storage, solar energy can be installed on the rooftop of any building and can be used independently.

4. This is **Avoid, Minimize & Generate (AMG) rule**, avoid energy, minimise energy and generate the remaining energy from alternative renewable sources.

For more details presentation of Dr. Sunita Kumari Chaurasia can be seen at p. 25 onwards or at the link https://drive.google.com/file/d/1QNHSYa_SPBAYFd-N_6L51-iU8pJrO2o_/view?usp=sharing

Keynote Address



**Dr Chintan Vaishnav,
Mission Director, Atal
Innovation Mission (AIM),
Niti Aayog**

1. Dr. Chintan Vaishnav, Mission Director, Atal Innovation Mission (AIM), Niti Aayog shared his views on the World Earth Day and said having come to be associated with the AIM, he has had a good fortune of interacting with a lot of younger students. The AIM Mission is Government of India's flagship initiative to create and promote a culture of innovation and entrepreneurship at the school level, across the length and breadth of our country. Started in 2016, there are 10,000 Atal Tinkering Laboratories (ATLs) identified in schools in 680+ districts of India. More than 7000 schools are funded till now and over 2 million students have access to ATLs. It aims to foster curiosity and innovation in young minds, between grade 6th to 12th across the country through 21st century tools and technologies such as Internet of Things, 3D printing, rapid prototyping tools, robotics, miniaturized electronics, do-it-yourself kits and many more. There is always a lot of excitement around innovation, and in meetings with lots of children.

2. He shared his vast experience of teaching at MIT, USA. How students are assigned problem, how they do experiments, how they are given challenges to identify problems, are the ways students are made to learn at MIT. At MIT the motto is mind and hands. It requires students to design their coursework where there is an equal emphasis on concept and activity, even if it is a philosophy course or a history course. He gave examples of how it is done for different disciplines. Large industries grow out of these innovations.

3. This year India has Presidency for G20. The G20 is organized in 33 topics, one of the 33 topics is the Start-up Engagement group. This is the first time start-ups have their own group and they will be able to produce policy recommendations that will go to G20 leaders of these economies as to how Start-up ecosystems across the world can work with each other. India has world's biggest cluster of 10,000 tinkering labs. Guidelines for setting such labs in public private partnership are being developed. Idea is to finally integrate with the curriculum in

such a way that it remains an evolutionary process, because the technology is always evolving. **ATL Tinkering Curriculum** and **ATL Calendar** are being developed. A lot of thinking process has gone into, for round the year activities. He then requested Dr. Shubham from NITI Aayog to share the future activities being planned under ATLS.

4. Shri Shubham deliberated on the future vision for Atal Innovation Mission (AIM) in Niti Aayog. He said, the objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platforms and collaboration opportunities for different stakeholders, and create an umbrella structure to oversee the innovation & entrepreneurship ecosystem from the school level. Schemes like *Atal Marathon* and *ATL Saarthi* are being envisaged by clustering of Atal Tinkering Laboratories (ATLS) in different districts. He gave examples from different states and said that we are soon launching **ATL Saarthi** in Delhi. Also the ATLS will be connected to the higher education institutes like IITs, innovation councils and in the AICTE tagged universities. ATLS Saarthi via IIT Delhi will be launched soon in the clusters of ATLS.

5. Lastly, Dr. Chintan said that we need to motivate schools to take an active role and suggested the teachers to please get involved with ATLS in their schools.

Thank you very much!

Vote of Thanks - Introduction to Teachers' Workshop



Mrs. Vimala Oak, Resource person, Royal Society of Chemistry, India Office

1. Resource Person, Mrs. Vimala Oak thanked everyone and said that today's deliberations in the Inaugural Session of the Workshop are very helpful in providing an understanding about the role of chemistry in the entire concept of environment protection. She said that Royal Society of Chemistry (RSC) has brought out this programme for all teachers across the country under the banner of Yusuf Hamid Inspirational program for science teachers aimed to do science teaching differently, which will create interest among the students. The RSC has introduced this activity based learning, matching with the schools syllabus. The focus of the workshop is not chemistry alone, but science as a whole. The aim is to make the learning as fun, using ingredients from our daily activities. Mrs Vimala Oak said that with the help of our group of students, we are monitoring teaching and pedagogy work carried out together. She gave brief introduction to the contents of the programme to be covered in the workshop as follows.

Workshop 1: Towards active learning

CAL1 Learning outcomes, programme and suggested timings
ARAL2a Simple acidity concept
ARAL2b Acid–base concept map
ARAL3 DART activity 1: The extraction of iron from its ore
ARAL4 DART activity 2: Reactions of alkali metals with water
ARAL5 Comment sheet on active-learning methods
ARAL6 Summary of directed activities related to texts (DARTs)
ARAL7 A simple Tarsia grid
ARAL8 Lesson plan template
CGEN2 Participant feedback form

Workshop 2: Chemical reactions and equations

ECHEMR1 Activity 1: Combination reaction between aluminium and iodine
ECHEMR2 Activity 2: Extraction of iron on a match head – a redox reaction
ECHEMR3 Activity 3: Double displacement (precipitation) reactions
ARCHEMR2 Physical properties and reactions of the alkali metals
ARCHEMR3 Types of chemical reaction
ARCHEMR4 Types of chemical reaction answer sheet
ARCHEMR6 Connect Four: Chemical reactions
ARCHEMR7 Connect Four: Chemical reactions cards

ARCHEMR8 Connect Four: Chemical reactions referee's sheet
ARCHEMR9 Dominoes: Chemical changes and equations
ARCHEMR11 Bingo: Chemical reactions
ARCHEMR13 Bingo: Chemical reactions key terms
ARCHEMR14 Word search: Chemical reactions
ARCHEMR15 Word search: Chemical reactions answer sheet
ARCHEMR16 Word equations: Teachers' notes
ARCHEMR17 Word equations: Student information
ARCHEMR18 Word equations
ARCHEMR19 Word equations: The reaction between acids and alkalis
ARCHEMR20 Word equations: The reaction between acids and metals
ARCHEMR21 Word equations: The reaction between acids and metal carbonates
ARCHEMR22 Word equations: Displacement reactions
ARCHEMR23 Word equations: Combination reactions
ARCHEMR24 Completing and writing word equations
ARCHEMR25 Ionic jigsaw: Making ionic compounds
ARCHEMR26 Ionic jigsaw

Workshop 3: The particle nature of matter

CSTATES1 Learning outcomes
ESTATES1 Activity: The energetics of freezing
ESTATES2 Activity: Melting and freezing
ESTATES3 Activity: Diffusion in liquids
ESTATES4 Activity: A Cartesian diver
ESTATES5 What happens when substances dissolve or when a precipitate forms?
ESTATES5-1 Dissolve and precipitate
ARSTATES1 Extract: Beyond appearances: Students' misconceptions about basic chemical ideas
ARSTATES2 Particles in motion
ARSTATES3_1 Particle models: Gas, liquid and solid
ARSTATES3_3 Particle models: Gas, liquid, solid activity cards
ARSTATES3_2 Activity: Examples of change of state
ARSTATES3_4 Gases, liquids and solids
ARSTATES4 What happens when water boils....?
ARSTATES5 States of matter
ARSTATES6 Particles graph exercise
ARSTATES8 Modelling activity
ARSTATES9 Lesson plan
CGEN2 Participant feedback form
CGEN9 Health and safety and risk assessments for Royal Society of Chemistry CPD workshop practical activities

Certificates were given to all participants after the two days' workshop.



Certificate to **Teachers**



Royal Society of Chemistry Certificate of Attendance

This is to certify that

attended the following teacher training workshops as
part of Royal Society of Chemistry
Yusuf Hamied Inspirational Science Programme

Workshop 1
Moving Towards Active Learning on

Workshop 2
Developing Active Learning Techniques
in Science on

Workshop 3
Taking Active Learning Techniques further
in Science



Dr Malti Goel
Climate Change Research Institute



Bhakti Dhamdhare
Royal Society of Chemistry

Registered charity number: 207890



World Earth Day 2023

April 24-25, 2023 at India International Centre, New Delhi

Dr. (Mrs.) Malti Goel, President
Climate Change Research Institute
Former Adviser, Government of India
CSIR Emeritus Scientist, JNU

Invest in Our Planet



World Earth Day

- The 'Club of Rome' in 1968 shared a common concern for the future of humanity and raised its voice against the degrading environment.
- Gaylord Nelson in Seattle USA, championed the cause and suggested Earth Day to create awareness among people.
- First Earth Day was celebrated on April 22, 1970.
- Each year different themes are adopted, concerning preservation of earth resources or environment.'
- In 2008 theme was 'Trees Please. Trees absorb CO₂ from air and give out oxygen (O₂).
- Trees in one acre produce enough O₂ for 18 people in a year and remove 2.6 tons of CO₂, which is equivalent to driving a car to a distance of 40,000km
- This year the Theme is "Invest in Our Planet".



Ways to Invest in Our Planet

- Promote Clean Renewables and Energy Efficiency
- Increase Plantation and Manage Agriculture
- Use Clean Transportation
- Avoid Plastic Use and Pollution
- Protect Marine Life in Ocean
- Invest in Environment Education
- Go Digital and Avoid Use of Paper

Climate Change Research Institute

[www.http://ccri.in](http://ccri.in)

- 29 Scientific Campaign Events held since 2013
- 16 Eminent Speakers participated in 'Environment and Earth Care' Lecture Series
- 19 Newsletters as Climate SAR and e-Magazines
- 9 Scientific Books on Climate Change contributed

- Earth Day –an annual event to demonstrate the need for environmental protection
- A Critical call - to come together to take urgent action on air pollution
- Air pollution in atmosphere causes health issues and global warming
- Air Pollution affects the cryosphere – frozen water in various locations at the earth's surface
- Global warming increases the risk of extreme weather events, flash floods, heat waves, changes in agriculture, sea level rise and long-term instability.



Climate Change Research Institute

"The world is connected and dependant on each other. Our international partnerships need to be centred on the progress of humanity."
—Shri Narendra Modi, Prime Minister of India

Vision

To become a Centre for Excellence in developing human resources and technical capacity building in the area of climate change adaptation and mitigation

Mission



To inform youth in schools and colleges about the ecosystem changes and consequences of climate change through awareness and capacity building on topics of scientific & societal interest such as Energy, Health, Air and Water.



To work with industry, undertake research & training for helping them to meet their Corporate and Social Responsibility (CSR) targets while reducing CO₂ footprints through imparting national and international knowledge.



Upcoming Bulletin



President Speak



Climate Change Research Institute (CCRI), India is founded in 2009 with a vision to become a Centre for Excellence in human source development. Its mission is to promote environment and climate change education, research, innovation and trainings among youth and members of wide strata of society about the consequences of climate change on our lives and importance of taking control measures.

It is a pleasure for me to introduce various activity highlights of the Institute. The Institute has enlarged its scope by taking up Implementation of Sustainable Development Goals and development of educational tools including bulletins and videos.

Imparting Knowledge



Implementation of Sustainable Development Goals



Programme and Activity Areas

- Awareness Workshops
- Capacity Building and Training Workshops
- Partnership in Excellence
- Sustainable Development Goals
- Knowledge Networking
- Science Policy Research
- Education tools & Videos





Earth Day 2020 amidst COVID-19
22nd April 2020

Complete Lockdown
Message sent for Self Care at home in Pandemic

station

Our Publications

Climate Change Research Institute India

AGBRES 2011

Carbon Capture, Storage, and Utilization

Sequestration Technologies for CO₂

ABC of Green Buildings Responsible Education

Carbon Utilization: Applications for the Energy Industry

Science & technology solutions for

mg@2023

Slide N



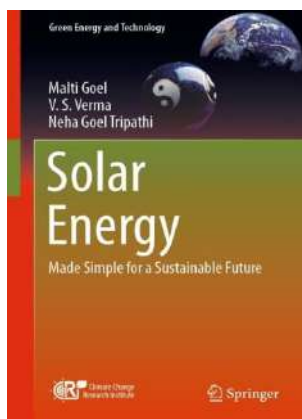
Group of Twenty – G20

India holds the Presidency of G20
from 1 December 2022 to 30
November 2023



- The theme is ***Vasudhaiva Kutumbakam***, which translates to "One Earth, One Family, One Future."
- Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, South Korea, Japan, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union.
- India is holding a series of meetings throughout the year in various parts of the country, 100 meetings already held on different themes
- India will convene the G20 Leaders' Summit for the first time in the final New Delhi Summit in September 2023, as 43 Heads of Delegations expected to participate.

Our Latest Publication



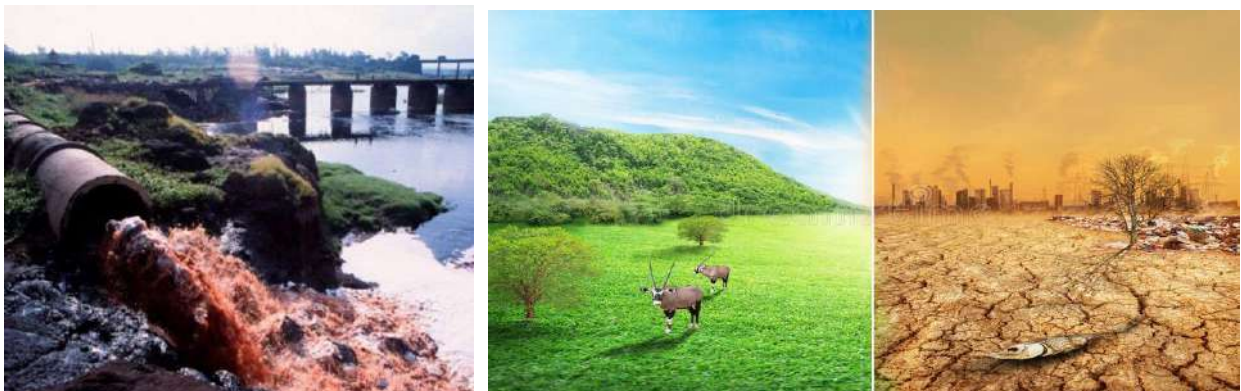
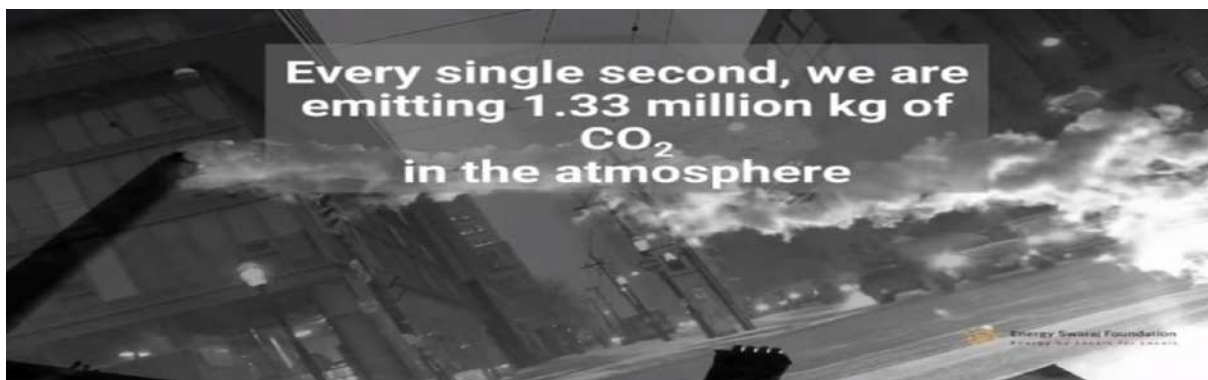
[Green Energy and Technology](#) Book
Series: Springer Nature

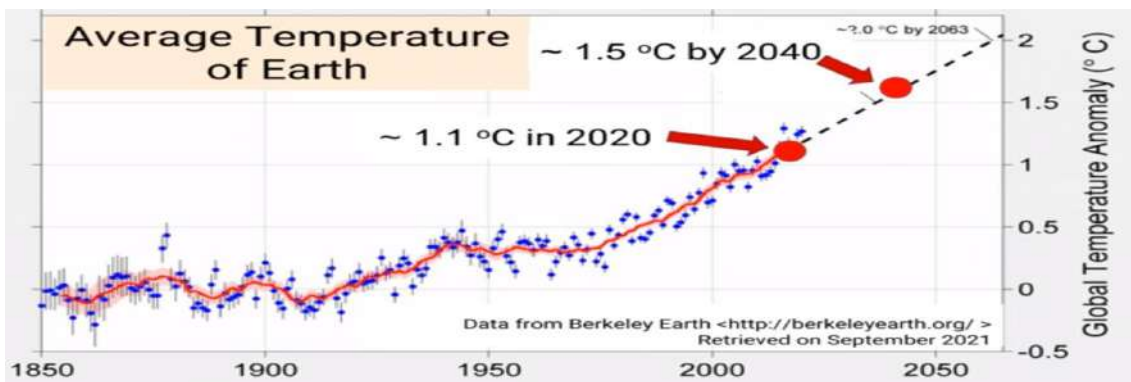
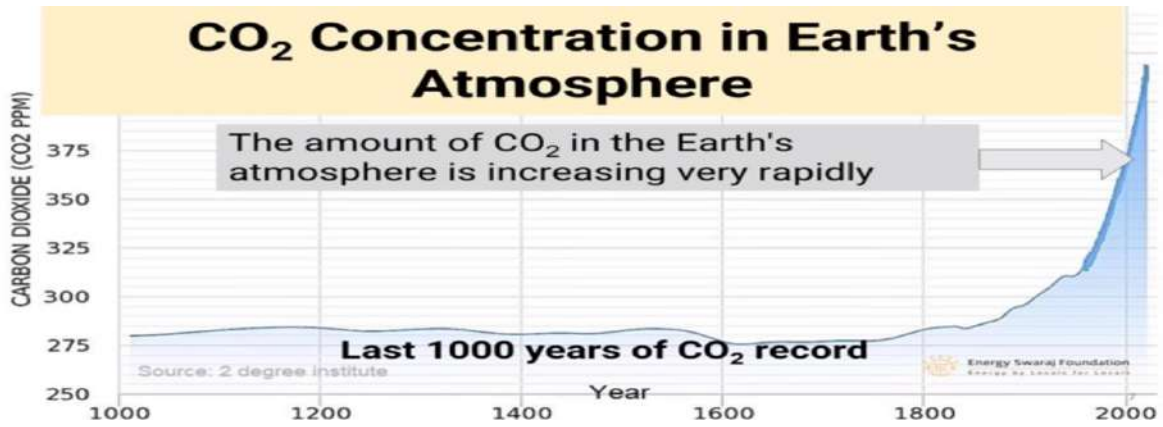
Thank you

Climate & Our Earth

Dr. Sunita Kumari Chaurasia
Assistant Professor, Computer Engineering
DSEU, Rajokri Campus

Pollution in Air, Water and Land

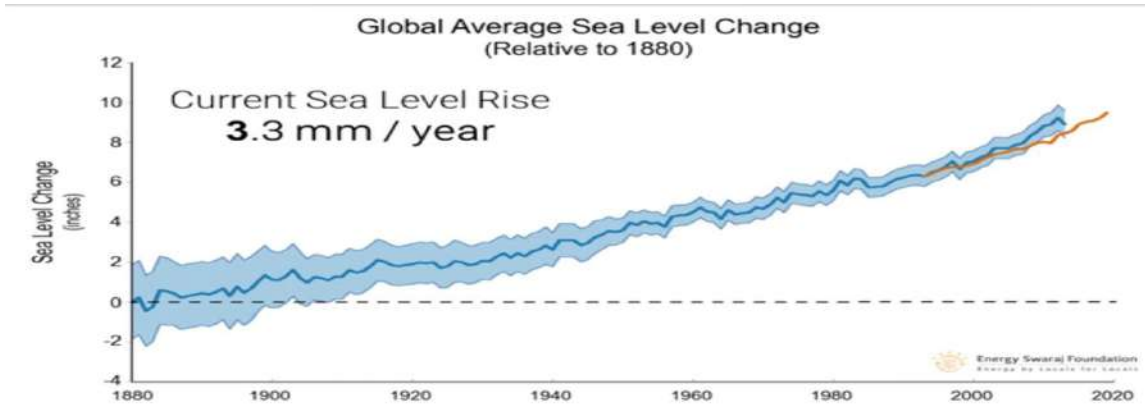




At 1.5 - 2°C & beyond, the climate change cannot be corrected

Climate Change is evident from:

- Increasing Glacier Melting
- Increasing Hurricanes
- Increasing Forest Fires
- Increasing Heatwaves
- Increasing Floods
- Increasing Sea Levels rising



What could be an ideal source of Energy?

- It should be a **clean** source of Energy
- It should be **available everywhere**
- People and countries should be able to generate their own energy, without needing import
- **The source should last, as long as humanity**



Biomass energy



Hydro energy



Wind energy



Wide observation
of the Nature



Geothermal energy



Tidal energy



Solar energy

“Earth has enough for everybody’s need
but not for anybody’s greed”
- Mahatma Gandhi

The size of our planet and all its **resources**
are limited

therefore, we should **limit our consumption**
of resources

Three Rules for Better Future

1st rule for limiting our consumption is to **avoid usage of resources**

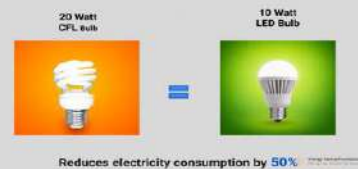


AVOID - means
STOP using some resources or reducing the duration of usage

If you can not Avoid the use of energy beyond a point,

2nd rule is to **Minimize** for limiting your energy consumption

How?



Minimize means
reducing energy consumption by replacing old appliances with **more efficient appliances**

3rd rule

is to **Generate** remaining energy needs **locally**,
as much as possible



Solar energy as viable solution

1. Cost-effective
2. All its components are easily available
3. Low maintenance
4. With battery storage, we can give away our electricity connection (no bills)
5. Can be installed on the rooftop of any building
6. Can be used independently even for a household

AMG Rule

Avoid Energy by 1/3rd

Minimize Energy by 1/3rd

Generate the remaining 1/3rd



All of US have contributed to climate change

All of US must be the part of solution

 Energy Swaraj Foundation
Energy. We. Control. For. Good.

Earth Day APRIL 22

**All of us must be the part of the solution,
do it not for the Government, do it not for the society,
but, do it and for your family, for your children and for
their future generations.**



Earth Day was founded in 1970 by Gaylord Nelson as a way to increase public awareness about environmental issues.



Sources:

1. Google.com
2. Energy Swaraj Foundation

List of the participating schools in the World Earth Day Event;

1. Army Public School, Shankar Vihar, New Delhi
2. Birla Vidya Niketan, Pushp Vihar, New Delhi
3. Brilliant Convent School, West Enclave, Pitam Pura, New Delhi
4. Delhi Police Public School, Safdarjung Enclave, New Delhi
5. Delhi State Science Teacher's Forum, Mayapuri , New Delhi
6. Govt Girls Secondary School, Raghbir Nagar, New Delhi
7. Kamal Model Sr. Sec. School, Mohan garden, New Delhi
8. NP CoEd. Sr. Sec. School, Lodhi Estate, New Delhi
9. New Horizen School, North of Humayun Tomb, Nizamuddin, East, Mathura Road,
South Delhi
10. Navyug School, Laxmi Bai Nagar, New Delhi
11. Navyug School, Sarojini Nagar, New Delhi
12. St. Thomas' Girls Sr. Sec. School, Mandir Marg, New Delhi
13. St. Anthony's Girls Sr. Sec. School, Paharganj, New Delhi
14. Universal Public School, Preet Vihar, New Delhi

List of confirm nominations received**April 24 – 25, 2023**

Sr. No.	Name of Nominations	Name of School	Contact/ E-mail	Nomination Date
1	Mrs. Kiran Manglik (Chemistry)	NP CoEd. Sr. Sec. School, Lodhi Estate, New Delhi 110003	9868713825 kiran.manglik@gmail.com	20/3/2023
2	Ms. Sonali Verma (Science)	Govt Girls Secondary School, Raghbir Nagar, Delhi 110027	9891998967 vermasonali2310@gmail.com	21/3/2023
3	Ms. Anjali Kakar (Chemistry)	Army Public School, Shankar Vihar	9350874836 anjalikakar5@gmail.com	4/4/2023
4	Ms. Sarita Chopra (Chemistry)	Army Public School, Shankar Vihar	8449663756 saritarishtichopra@gmail.com	4/4/2023
5	Ms. Riya Dabas (Chemistry)	Army Public School, Shankar Vihar	8803008000 riya1994hooda@gmail.com	4/4/2023
6	Ms. Rinky (Chemistry)	Army Public School, Shankar Vihar	7210796134 rinkypolowalia44@gmail.com	4/4/2023
7	Ms. Deepika Seth (PGT Chemistry)	Delhi Police Public School, Safdarjung Enclave	9811634249 deepikakumar2001@gmail.com	5/4/2023
8	Ms. Savita Singh (TGT Science)	Delhi Police Public School, Safdarjung Enclave	9999765305 savita.dpps@gmail.com	5/4/2023
9	Ms. Monika Chauhan (Science)	New Horizon School	9911082871 monika.chauhan@nhsdelhi.com	13/4/2023
10	Mrs. Shweta Fredrick	St. Thomas' Girls Sr. Sec. School, Mandir Marg, New Delhi-01	9350921333, shwetaramsay@gmail.com	13/4/2023
11	Mrs. T. Kaur	St. Thomas' Girls Sr. Sec. School, Mandir Marg, New Delhi-01	9015713593 batrap037@gmail.com	13/4/2023
12	Mrs. S. Agarwal	St. Thomas' Girls Sr. Sec. School, Mandir Marg, New Delhi-01	9811978462 manishweta.agg@gmail.com	13/4/2023
13	Ms. M. Loomba	St. Thomas' Girls Sr. Sec. School, Mandir Marg, New Delhi-01	9810204613 mannpreetkaur092@gmail.com	13/4/2023
14	Ms. Sunita Bhandari (PGT Chemistry)	Birla Vidya Niketan, Sector 4, Pushp Vihar, New Delhi 110017	sunitabhandari16@gmail.com	15/4/2023
15	Ms. Surbhi Singh (PGT Biology)	Birla Vidya Niketan, Sector 4, Pushp Vihar, New Delhi 110017	surbhi.singh546@gmail.com	15/4/2023

16	Ms. Shweta Sharma (TGT Science)	Birla Vidya Niketan, Sector 4, Pushp Vihar, New Delhi 110017	shwetashwetasharma76@gmail.com	15/4/2023
17	Ms. Hemlata Pandey (TGT Science)	Birla Vidya Niketan, Sector 4, Pushp Vihar, New Delhi 110017	hemlatabvn@gmail.com	15/4/2023
18	Mr Harish Rautela (Chemistry)	Birla Vidya Niketan	8383026496 Harryascent@yahoo.co.in	17/4/2023
19	Ms. Suman (Biology)	Kamal Model Sr. Sec. School. Mohan garden	9868652323 sumanrajvan25979@gmail.com	15/4/2023
20	Ms. Seema Manocha (Chemistry)	Kamal Model Sr. Sec. School. Mohan garden	9971011633 manochaseema421@gmail.com	15/4/2023
21	Ms. Arti Dwivedi (TGT science)	Kamal model Sr. Sec. School	9871809745 arti.kms2023@gmail.com	17/4/2023
22	Ms. Nikita Jha (Science)	Kamal model Sr. Sec. School	9205804524 jhanikita6@gmail.com	17/4/2023
23	Ms. Shipra Rathi (Science)	Kamal model Sr. Sec. School	7042048753 shipra8384@gmail.com	18/4/2023
24	Dr. Anil Kumar Vashishtha (Chemistry)	Delhi State Science Teacher's Forum, New Delhi	9818581394 akv777777vashishtha@gmail.com	17/4/2023
25	Dr. Hari Om (Chemistry)	Delhi State Science Teacher's Forum, New Delhi	9818501515 drhariom05@gmail.com	17/4/2023
26	Dr. Ravijot Sandhu (Chemistry)	Navyug School, Laxmibai Nagar	9999919522 ravijotsandhu@gmail.com	17/4/2023
27	Dr. Priyanka choudhary (Chemistry)	Brilliants Convent, West Enclave pitam pura	9599023867 drpriyankachaudhary701@gmail.com	17/4/2023
28	Ms. Anamika Chawla (Chemistry)	St. Anthony's Girls Sr. Sec. School	9818181251 anamikachawla08@gmail.com stanthonygsss@gmail.com	17/4/2023
29	Ms. Kum Kum Bansal (Chemistry)	Navyug School Sarojini Nagar	9811976696 kumkumbansal101@gmail.com	18/4/2023
30	Mrs Ipsita Dutta (PGT- Chemistry)	Universal Public school	9868350108 ipsita.dutta94@gmail.com	22/4/23
31	Ms. Arti Bhatia (Eco Club teacher)	Universal Public school	9810705603 ababhatia01@gmail.com	22/4.23
32	Sh Pradeep Ahuja	LV Institute	9435160949 p_d_ahuja@yahoo.com	23/4/2023

Climate Change Research Institute
24th & 25th April, 2023 at India International Centre, New Delhi
List of Participants

Sr. No.	Name	Designation/ Organization
1.	Dr. (Mrs.) Malti Goel	President, Climate Change Research Institute
2.	Mrs. Vimala Oak	Royal Society of Chemistry, Bangalore
3.	Sh Suresh Goel	Suresh Goel & Associate (SGA)
4.	Sh A.K. Goel	UNESCO
5.	Sh L.K. Bansal	Climate Change Research Institute
6.	Dr. Sunita Kumari Chaurasia	Asst. Prof. DSEU, Rajokri Campus, Govt of NCT of Delhi
7.	Sh Gautam Sen	Oil and Natural Gas Corporation Limited (ONGC)
8.	Mr Amit Kumar	Suresh Goel & Associate (SGA)
9.	Prof. D. P. Agrawal	CRRI
10.	Sh Irshad Ahmed	Jamia Millia University
11.	Sh A.K. Jain	Ex-Commissioner, DDA
12.	Dr. Chintan Vaishnav	Mission Director, Atal Innovation Mission (AIM), Niti Aayog
13.	Dr. Shubham	Atal Innovation Mission (AIM), Niti Aayog
14.	Sh Rajesh Kr.	Ind. Journalist
15.	Mrs. Meera Shah	SAHEE, Jharkhand
16.	Sh Adi Shah	SAHEE, Association for Action on Health, Education
17.	Dr. Anil Kumar Vashishtha	Delhi State Science Teacher's Forum
18.	Dr. Hari Om	Delhi State Science Teacher's Forum
19.	Ms. Sarita Chopra	Teacher, Army Public School
20.	Ms. Riya Dabas	Teacher, Army Public School
21.	Ms. Sunita Bhandari	Teacher, Birla Vidya Niketan
22.	Ms. Surbhi Singh	Teacher, Birla Vidya Niketan
23.	Ms. Shweta Sharma	Teacher, Birla Vidya Niketan
24.	Dr. Priyanka choudhary	Teacher, Brilliants Convent, West Enclave Pitam Pura
25.	Ms. Deepika Seth	Teacher, Delhi Police Public School
26.	Ms. Savita Singh	Teacher, Delhi Police Public School
27.	Ms. Sonali Verma	Teacher, Govt Girls Secondary School

28.	Ms. Suman	Teacher, Kamal Model Sr. Sec. School
29.	Ms. Seema Manocha	Teacher, Kamal Model Sr. Sec. School
30.	Ms. Arti Dwivedi	Teacher, Kamal Model Sr. Sec. School
31.	Ms. Nikita Jha	Teacher, Kamal Model Sr. Sec. School
32.	Ms. Shipra Rathi	Teacher, Kamal Model Sr. Sec. School
33.	Ms. Monika Chauhan	Teacher, New Horizon School
34.	Ms. Kum Kum Bansal	Teacher, Navyug School, Sarojini Nagar
35.	Ms. Anamika Chawla	Teacher, St. Anthony's Girls Sr. Sec. School
36.	Ms. Shweta Fredrick	Teacher, St. Thomas' Girls Sr. Sec. School
37.	Ms. T. Kaur	Teacher, St. Thomas' Girls Sr. Sec. School
38.	Ms. S. Agarwal	Teacher, St. Thomas' Girls Sr. Sec. School
39.	Ms. M. Loomba	Teacher, St. Thomas' Girls Sr. Sec. School
40.	Ms Ipsita Dutta	Teacher, Universal Public school
41.	Ms. Arti Bhatia	Teacher, Universal Public school
42.	Sh. Neeraj Gupta	Nav Abhiyan
43.	Ms Sneha	Student (XII), Navyug School, Sarojini Nagar
44.	Sh Harsh Kumar	Student (XII), Navyug School, Sarojini Nagar
45.	Sh Pradeep Ahuja	Lingayas Vidyapeeth Institute
46.	Mohammad Abrar	Climate Change Research Institute
47.	Ms Aarti Rajput	Climate Change Research Institute
48.	Mr Brij Mohan	Climate Change Research Institute
49.	Mr Yogendra Singh	Climate Change Research Institute

Climate Change Research Institute

Organizes

Two days workshop on Activity Based Learning for Schools Teachers' in Chemistry & Environment

World Earth Day - 2023

April 24 – 25, 2023
**at Seminar Hall 1, 2, 3 Kamladevi Complex,
IIC, New Delhi**

In association with
India International Centre

Knowledge Partner
The Royal Society of Chemistry



Who can Attend?

Science teachers for classes 8th to 12th standard from Delhi and NCR can register themselves from their schools to physically participate on both the days.

Duration

April 24-25, 2023 from 9:30 to 5 PM.

Modules

There are three main Modules in the workshop. By the end of three modules teachers will be able to:

- extend their repertoire of teaching techniques
- plan lessons using active learning strategies
- use a range of active learning techniques to teach abstract ideas

Link for Registration: -

<https://forms.gle/TENGWRLLaUBmfPtaA>



The CCRI link for Pictures: <https://photos.app.goo.gl/8Vx4wGr9qt7DMYNg9>



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