

PULSE

E-SCIENCE
MAGAZINE

DELHI PUBLIC SCHOOL
NADERGUL

CLIMATE CHANGE
CARBON

PRESENTED BY
DEPARTMENT OF SCIENCE



NADERGUL

VOLUME 1, ISSUE 1

**CLIMATE CHANGE
SPECIAL EDITION**

VISION

To create proactive and ethical, global citizens of the future with care and commitment to its social, ecological and economic environment.

MISSION

To create an environment that empowers every learner to explore, grow and lead as global citizens and life long learners.
To prepare learners to thrive in a globalised world as empathetic leaders, advocates of sustainability and champions of social responsibility.

SCHOOL PHILOSOPHY

*At School Teacher is the Parent
At Home Parent is the Teacher
The Child is the Centre of
our Universe*

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PREFACE TO THE FIRST EDITION

We are thrilled to present this special edition of our E-Science Magazine, dedicated entirely to one of the most pressing issues of our time — Climate Change. As students, educators, and global citizens, we stand at a unique crossroad where science, responsibility, and action must come together.

Climate change is not just a topic in textbooks or news headlines — it is a lived reality. From rising temperatures and melting glaciers to shifting weather patterns and biodiversity loss, the signs are all around us. But with knowledge comes the power to change, and this issue is a tribute to that power — the power of science, innovation, and the informed young minds who will shape our planet's future.

In this special edition, you'll find a diverse blend of student research, teacher-led insights, climate comics, eco-experiments, project spotlights, and green innovations. Each article, drawing, or report has been carefully curated to spark curiosity, encourage critical thinking, and inspire climate action — both in and beyond the classroom.

From the imaginative young artists of Grades 1–5, to the creative thinkers in Grades 6–8 who challenge us with riddles, quizzes, and comic strips, and the high school visionaries who share bold ideas and thoughtful perspectives through poems, articles, stories, infographics, and investigatory research — this edition celebrates curiosity, creativity, and climate consciousness across every grade level.

We express our heartfelt gratitude to our Principal, Dr. Anupma Saxena, for her constant guidance, encouragement, and unwavering support in making this edition a reality. Her vision continues to inspire every step we take toward meaningful learning and responsible citizenship.

We also thank all our contributors, teachers, and coordinators who helped bring this edition to life. May this magazine not only inform but ignite — ignite ideas, awareness, responsibility, and most importantly, hope.

Let us explore, understand, and act — together — for a cooler, greener, and better tomorrow.

Chief-Editorial Board,
E-Science Magazine Team,
Department of Science,
Delhi Public School Nadergul



Principal's Message

Dr. Anupma Saxena



It gives me great pleasure to present the inaugural edition of our e-Science Magazine, “Pulse” – Climate Change Special Edition, at Delhi Public School, Nadergul. Science is the pulse of progress, and in today’s world, understanding climate change has become more important than ever. Through this special edition, we aim to raise awareness among students about the causes, impacts, and solutions related to this global challenge.

Climate change is not a distant issue; it is already affecting our planet’s ecosystems, weather patterns, and human lives. As educators, we have a responsibility to equip our students with scientific knowledge, critical thinking skills, and a sense of social responsibility. “Pulse” provides a platform where students explore the scientific facts behind climate change and reflect on their role in creating a sustainable future.

This edition features well-researched articles, creative projects, infographics, poetry and arts that highlight key aspects of climate change—from greenhouse gas effects and renewable energy solutions to the importance of sustainable habits. The contributions reflect not just academic learning but also the students’ passion, awareness, and determination to be agents of change.

I am proud of our science faculty and editorial team for their guidance in shaping this publication and encouraging students to think deeply and communicate effectively. I also congratulate the students whose hard work and dedication have made “Pulse” a meaningful collection of knowledge and ideas.

At DPS Nadergul, we remain committed to promoting sustainability through practical initiatives like energy conservation, waste reduction, and biodiversity promotion within our campus. This magazine reinforces our goal of nurturing scientifically informed and environmentally responsible citizens.

Let “Pulse” inspire students, teachers, parents, and the community to reflect on the urgent need for climate action. Together, we can respond to the pulse of our planet and work toward a cleaner, greener, and more sustainable future.

Editorial Advisory Board

Member's Message

Nurturing Scientific Temper in the Classroom: A National Imperative

By: Dr. M. Dutt



In today's fast-evolving world, scientific thinking extends beyond laboratories and research institutes; it is a vital life skill that enables individuals to navigate complexity, make informed decisions, and foster innovation. As India confidently strides into the Amrit Kaal, aiming to create a Viksit Bharat by 2047, the role of education in cultivating a scientific temper among young minds becomes crucial.

Scientific temper is not merely about memorising facts or formulas. It involves fostering curiosity, encouraging observation, questioning assumptions, and embracing evidence over opinion. This mindset is essential for both discovery and democracy. The National Education Policy (NEP) 2020 and initiatives such as Vijnana Bharati's Shiksha Shilpi programs rightly emphasise experiential and inquiry-based learning—shifting away from rote memorisation to reasoning.

In the classroom, this shift can take many forms: hands-on experiments, project-based learning, integration of local knowledge systems with global scientific methods, and viewing failure as a stepping stone for deeper understanding. In this context, teachers should be seen not just as instructors but as facilitators of wonder.

Technology must serve as a bridge—not a barrier. From artificial intelligence to biotechnology, students need to be guided not only in using technology but also in questioning its ethical implications, understanding its societal impact, and innovating responsibly.

It is essential to remember that scientific thinking is not only about developing the next ISRO mission or COVID vaccine; it also involves cultivating citizens who think, act wisely, and dream boldly. By nurturing this mindset, educators plant the seeds for a truly self-reliant and enlightened nation.

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Plastic-Eating Bacteria: Sci-Fi or Solution?

Plastics are everywhere. They are used in bottles, bags, packaging, and even clothes. But its convenience comes with a cost. Millions of tons of plastic end up polluting our lands and oceans every year. Regular plastics take hundreds of years to decompose, harming animals and contaminating ecosystems along the way.

Have you ever heard of plastic-eating bacteria? This sounds like science fiction, but I can assure you that it's not. Scientists have discovered bacteria, like *Ideonella sakaiensis*, that can break down PET (Polyethylene terephthalate), which is a common plastic that is used in water bottles and food containers. These bacteria produce two special enzymes that turn plastic into harmless substances like water and carbon dioxide.

Imagine the Future:

Picture this – in the year 2050, cities have plastic recycling centers which are run completely by plastic-eating bacteria. Instead of huge garbage bins, communities collect plastic waste and send it to the bacteria bins, which then the plastic-eating bacteria transforms into clean energy. Maybe one day, trash bins at your house could also have these bacteria, making it easy to recycle at home.

Yes, there are many challenges.

While plastic-eating bacteria are a promising solution, scientists are still working out the best ways to use them safely. Here are some drawbacks:

- Bacteria work slowly, and scientists want to make them faster.
- Most bacteria only eat certain types of plastic, not all.
- We need to be sure they don't harm the environment when used on a large scale.

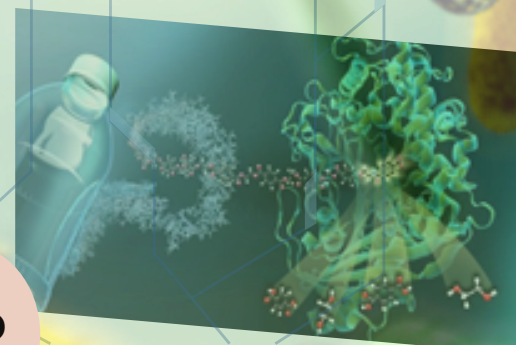
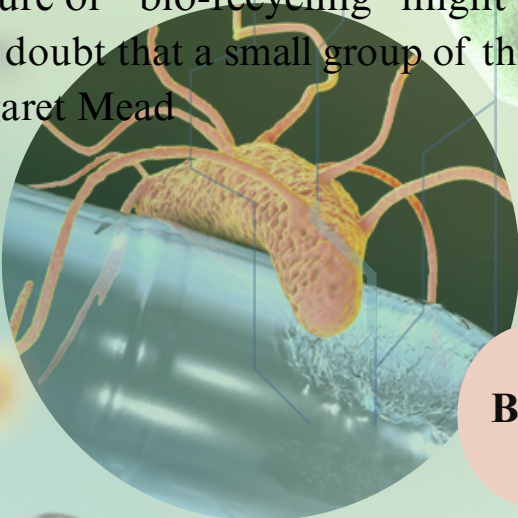
What Can We Do To Help Reduce Plastic Pollution?

You don't have to be a scientist to help, you just need to follow the three R's, which are:

- Reduce: Use less plastic whenever possible.
- Reuse: Find new ways to use containers and bags.
- Recycle: Make sure plastics go into the right bin.

Plastic-eating bacteria may sound like something from a science fiction movie, but they could be our real-life heroes in the fight against pollution. With more research, the future of “bio-recycling” might actually be closer than we assume.

"Never doubt that a small group of thoughtful, committed citizens can change the world."
– Margaret Mead



Written by:
B. Mridini, Grade IX-D

Can AI Help Fight Climate Change?

Artificial Intelligence (AI) is said to be a revolution bringer in many categories, irrespective of the field of work or whether it is the climate. It has the capability to influence everything- from medical field to climatic changes. But is it true that it can completely change a climate?

While being inefficient of having a direct impact on Climate Change, it can be used as one of the supportive means to help change the Climate. The main tensions between the Climatologists is the potential problems that can occur if they plan to meddle with climate- which can affect the entire population and vegetation of that area.

What are the Possibilities?

There are many ways AI can change climate, the most known instances are:

- Removing Carbon Particles:

A company called Climeworks in Iceland use AI to remove harmful Carbon Particles from air to cool down plant temperature.

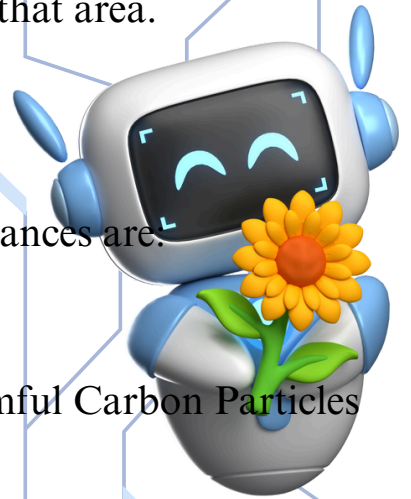
- Sunlight Controlling AI:

Harvard scientists use AI to test how safe it would be to spray small particles in the air to reduce heat from the sun.

- AI Powered Tree Farms:

In Australia, drones with AI plant up to 40,000 trees a day to restore forests that fight climate change that can also help cool down the atmospheric temperature.

Though it is completely not fictional that AI can change climate, the disadvantages which hold the mankind back is very important to consider before meddling with the nature, as the AI changing climate thoughts remained buried in labs for now.



Written by:
Sai Adithya, Grade IX-D



Greener Gadgets: Explore how devices are becoming eco-smart.

We live in a world where gadgets are everywhere—from the phones in our pockets to the appliances that run our homes. But what if these same devices could do more than just make our lives easier? What if they could actually help the planet too?

That's where green gadgets come in—tech tools designed with the environment in mind. They're not just smart in function, but smart in purpose, reducing energy use, limiting waste, and encouraging more sustainable living.

What Makes a Gadget "Green"?

At their core, green gadgets aim to minimize their environmental impact. That means using fewer harmful materials, consuming less energy, and being easier to recycle or reuse. Think solar-powered chargers, energy-efficient refrigerators, or smart home devices that know when to switch themselves off.

These kinds of gadgets are becoming more common—and more powerful. They don't just help us live better; they help us live smarter and more responsibly.

Why It Matters (to You and the Planet)

Every gadget we use leaves a footprint—from the resources needed to make it to the energy it uses every day. Green gadgets help shrink that footprint.

They also come with personal benefits. Many eco-friendly devices are healthier to have around because they avoid toxic materials. And while they can cost more upfront, they often save money over time by lowering electricity bills.

Plus, there's the growing issue of electronic waste. In 2023–2024, over 750,000 metric tons of e-waste were recycled—a major step forward, but still just a fraction of what's tossed out globally. Choosing products that are easier to repair, upgrade, or recycle helps keep that number going in the right direction.

Old Tech, New Purpose

Going green doesn't always mean buying new stuff.

You can give your old tech a second life. Got a smartphone you're not using? Turn it into a home security cam. That old laptop collecting dust? It can become a media center or a learning computer for your kids.

Sometimes the greenest choice is simply not throwing things away.

The Future of Green Tech

Behind the scenes, some exciting innovations are making eco-friendly tech even better:

AI-powered devices that learn how to save energy based on your habits

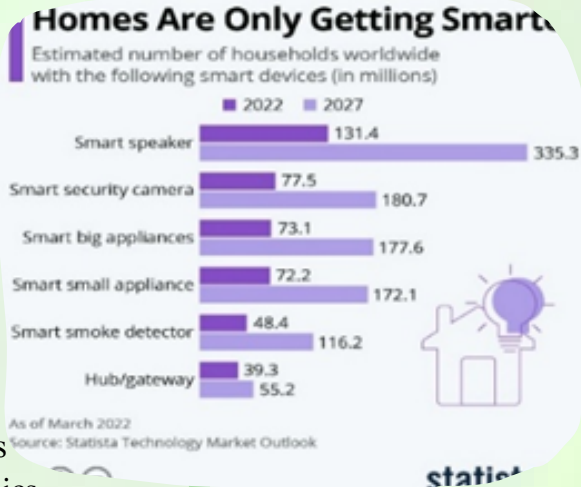
Urban mining, which recovers precious metals from discarded electronics

Green manufacturing, where factories reduce emissions and energy use

Smarter recycling systems that use AI to sort and reclaim materials more efficiently

Choosing Wisely

Next time you're shopping for a gadget, look for labels like Energy Star, or features like solar charging and low power use. Choose products designed to last, and ones you can recycle or repair when the time comes.



Going green with your gadgets doesn't mean giving up convenience or performance. It's about making thoughtful choices—ones that are better for your wallet, your health, and the planet. And the best part? Those small changes add up! After all, smarter tech leads to smarter living.



Poetry for the planet

When I was nine, I saw trees that were green.
Now they feel fake and painted to be seen.
I used to listen to my friends talk about flying cars.
All I wanted to see were the stars.

By: Akshaya Goswami
Grade: X-B

The world is beautiful and destroyed not.
All that is, is growing hot.
I watch the wildfires on the news,
The floods that bring millions of views.

The draughts that bring starvation,
The wars brought on by nations.
We are the last to see fireflies.
We may be the only ones with open eyes.

Their meteor struck them with great power.
Not in a physical form, is ours.

For we who have glowing rectangles in our hands.
For we who have tears left in our glands.
It's not easier than a click or a like,
To raise your voice, even without a mic.

Climate Change is no longer the same.
Fighting it is no longer our aim.
They say, it we must escape.
The earth watches agape.

We are the voices of change, so we've heard so many times.
Tell me, how many have we tried?
Enough not many, many not enough.
The path ahead is nothing less than tough.

It shouldn't be forced, your contribution.
It shouldn't be so you evade retribution.
It should be if you care to see.
That our world is in dire need.

A minute to order seeds.
A day for the delivery.
A hour cut half dig shall we.
A moment of time the water seeps.
A month or so, and we have a tree.
A year or so, 10 people can breathe.

Then let this not be a poem we forget in time,
But a quiet call to act, in reason and rhyme.
The Earth won't wait for perfect plans—
It needs our hearts, our minds, our hands.

**THE EARTH IS NOT DYING.
IT'S BEING KILLED—
AND THE WEAPON IS
OUR SILENCE.**



Poetry for the planet

By: G. Deekshitha Shree
Grade: IX-H

Mother Earth is trembling,
The Sun is spitting fire,
Rivers are drying up,
Forests are burning.

Glaciers are melting,
Sea levels are rising,
Storms are frightening,
Drought is tormenting.

What is all this happening?
This is climate change.
Nature's fury,
The result of our mistake.

We cut down the trees,
We pollute the air,
We wounded the Earth,
Now we are paying the price.

Wake up, rise, understand change
This Earth is ours; we must save it.
Plant trees, save water, reduce waste,
Love the environment. Take a pledge to be positive.

Hyderabad’s Climate Remix: More Heat, Less Green

How our city is changing, why it matters, and what we can do about it.

“Tech-towers and ancient temples,
Where biryani simmers and Hussain Sagar ripples,
The city of pearls and nawabs,
our Hyderabad’s history rich,
A symphony played in a timeless pitch.”

But beneath its shimmering skyline and centuries-old charm, a quiet storm is brewing. Not the kind with thunder and rain, but one made of rising heat, vanishing lakes, and a climate that's changing faster than the city itself .

Between 2001 and 2021, Hyderabad’s land surface temperature went up by 2.44°C compared to nearby rural areas. This sharp rise is mainly because of rapid urbanization and the spread of concrete structures, which trap heat. Areas like Amberpet, Ameerpet, Charminar, Kukatpally, and Chandrayangutta have been especially affected, with over 4.7 million people feeling the impact of this growing heat.

In recent years, rainfall in the city has become unpredictable. The 2025 monsoon arrived on May 26, almost two weeks earlier than usual, which worried both farmers and planners. April brought 75 mm of rain, more than expected, yet groundwater levels remained low at around 20 meters below the surface. This is far below the ideal level of 5 meters. Experts believe this is because the rain comes in short, heavy bursts that run off quickly due to concrete surfaces, instead of soaking into the ground. Even though the city received over 1,100 mm of rainfall during the 2024 to 2025 monsoon season, most of it led to flash floods and runoff, with very little groundwater recharge. By July 2025, Hyderabad had already experienced its driest June in over ten years, followed by weak rainfall in July.



By Manilata Manan , Grade: 10-F

ONCE A THRIVING LAKE, NOW ECOLOGICAL HAZARD



- Study says synthetic drugs, toxic chemicals flowing into lake threaten its existence
- Lake most polluted during pre-monsoon period
- High levels of Nitrates & phosphates found in lake post-monsoon
- Alarming levels of heavy metals in lake

NOT THE FIRST TIME

- 21 synthetic drugs found in the water in 2009
- Researchers attributed this to waste discharge from pharma companies

EXPERTS SUGGEST

- Reducing influx of pollutants
- Improving sewage treatment
- Promoting community awareness

Apart from temperature and rain, pollution is also on the rise. While carbon dioxide is often the focus of global warming discussions, Hyderabad now leads Indian cities in methane emissions, which is a much more powerful greenhouse gas. The main sources are untreated waste at Jawahar Nagar, pollution in lakes like Hussain Sagar, and sewage flowing into the Musi River. From 2019 to 2023, methane levels in the city rose from 1,880 ppb(parts per billion) to 1,970 ppb. Despite the rainfall, the air quality remains poor, especially in places like Somajiguda, Old City, Kompally, and Gachibowli. Heat, traffic, and concrete make the city hotter at night and trap pollutants for longer, increasing health risks.

Hyderabad has lost much of its natural space—about 61% of its lake area since 1979. Hussain Sagar shrank from 550 to 349 hectares, and thousands of lakes have dwindled to just 70–500. Forests in areas like Gachibowli are being cleared, and native trees replaced with dry, lifeless shrubs. Climate change is making summers hotter, rains more intense, groundwater scarce, and pollution worse. These challenges are serious but offer a chance to rethink how we live. Residents can help by planting trees, conserving water, reducing waste, and using cleaner transport. The government and businesses must support sustainable planning, protect green spaces, and invest in better waste and water systems. Public awareness is key. By working together, we can protect Hyderabad’s environment and ensure it remains a vibrant, healthy city for generations to come.



Global Impact: Worldwide Effects of Climate Change

What Is Climate Change?

Climate change is the long-term heating of Earth's climate caused by human activities, mostly burning fossil fuels. This releases greenhouse gases, which trap heat in the atmosphere. As the planet gets warmer, we see big changes—not just in one place, but all over the world.

Rising Sea Levels: Coastal Nations in Danger

As glaciers melt and oceans warm, sea levels rise. This puts millions of people living near coastlines at risk of floods and losing their homes. Bangladesh is losing land to the sea each year. Small island nations like the Maldives and Tuvalu may become uninhabitable in the next few decades. In the United States, cities like Miami and New Orleans are already dealing with regular flooding.

Nature and Wildlife at Risk

Climate change is harming ecosystems around the globe:

- In the Arctic, ice is melting fast, threatening polar bears and Inuit communities.
- The Amazon Rainforest is drying out, leading to more fires and loss of biodiversity.
- Coral reefs in the Great Barrier Reef (Australia) are dying from warmer oceans

Extreme Storms and Disasters

As the planet warms, storms are becoming stronger and more destructive. In the Philippines, powerful typhoons destroy homes and lives every year. Caribbean nations like Puerto Rico and Barbados are hit by more intense hurricanes. Pakistan experienced historic floods in 2022, displacing millions.

Droughts and Water Shortages

Some countries are becoming hotter and drier, making farming difficult and water hard to find.

- Kenya and parts of Ethiopia face severe droughts, causing hunger and food shortages.
- India suffers from water stress in cities and crop failures in rural areas.
- In Australia, long droughts have led to massive wildfires and damage to agriculture.

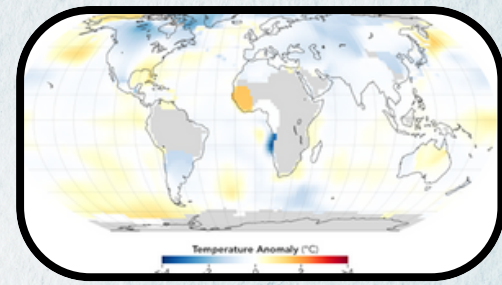
A Global Problem Needs a Global Solution

Climate change doesn't stop at borders. That's why countries are working together:

- The Paris Agreement is a global promise to reduce carbon emissions.
- Rich countries are being asked to help poorer countries adapt.
- Students around the world are joining climate strikes and awareness campaigns

Conclusion: We All Have a Role

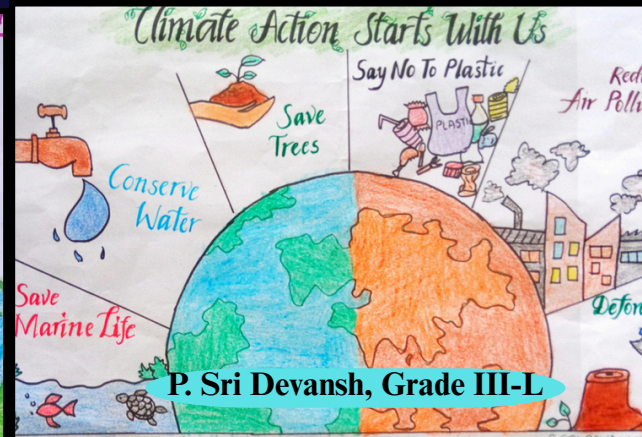
From Asia to Africa, from islands to ice caps, the global impact of climate change is real and growing. No matter where we live, we are all connected. The good news is that by learning, speaking up, and making greener choices, you can be part of the solution.



TAKING ACTION WITH ART



Kanishk Varma, Grade I-A



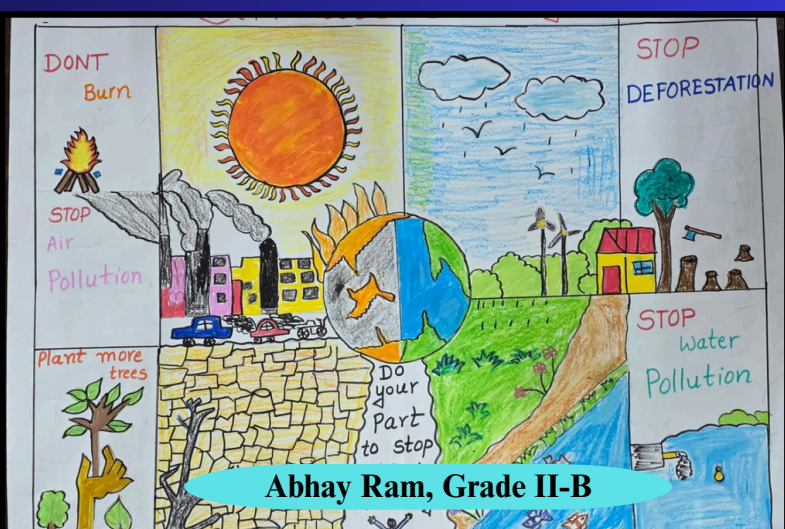
P. Sri Devansh, Grade III-L



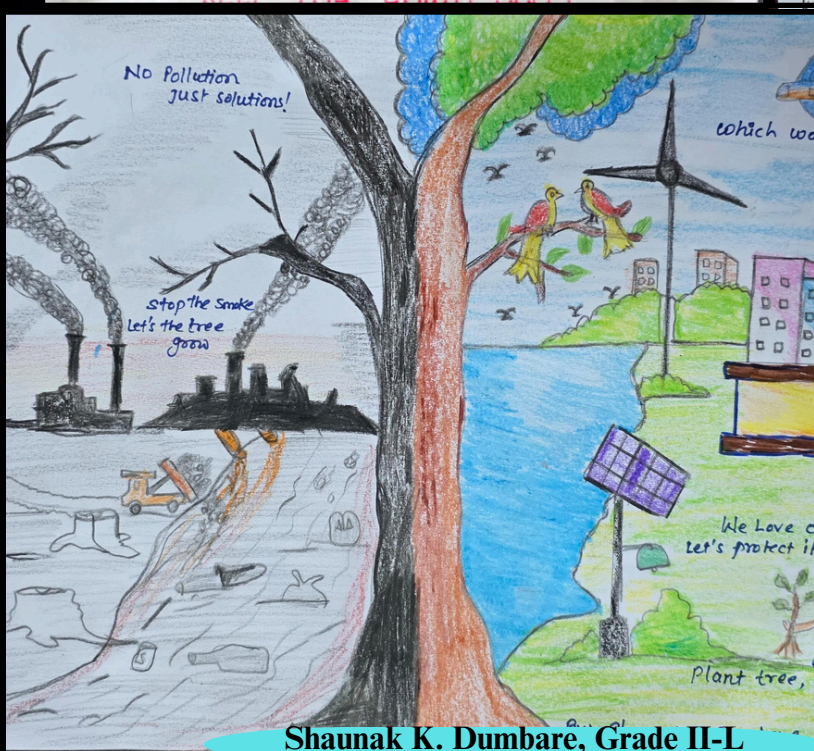
Shawn. P, Grade V-A



K. Ruthvika, Grade III-L



Abhay Ram, Grade II-B



Shaunak K. Dumbare, Grade II-L



Purvi, Grade II-K

CLIMATE COMICS & INFOGRAPHICS



By: Swikriti Suman, Grade VIII-I



By: Aditi Kashyap, Grade VIII-C

Captain Eco Vs. Plastic Monster



JOIN US, PLASTIC MONSTER! RECYCLE YOUR WAYS!



Turning Ideas into Action

For a bright future
in making...



"I imagine people using **public transport** on their way to work. Me, **cycling** on the pathway to the grocery shop for my snacks. Our community having **bins for recycling** and **upcycling contests**."



"That's great. I too feel that we should have the same. **Energy efficient appliances** should come into use with **basic measures of saving energy** like turning off lights when not in use. I visited a **sustainably-built hall** some months ago, It was truly cool and inspiring."

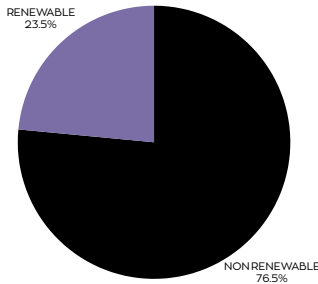
"People using **eco-friendly products** should become normal. I have seen them talking that having cloth bags for daily use is just considered luxurious. **Adding more plants** in our homes not only makes it cozy but also improves the air quality that you breathe! "

"To sum it up, we need to implement these in our daily lives. We shouldn't wait for someone to take an initiative. It's us who is going to be affected in a long run. These ideas are real but are going on a small scale. Making a larger impact is our responsibility !"



Arna Kumar

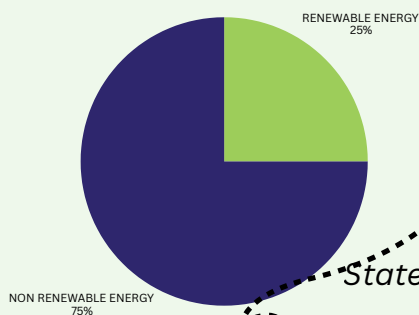
ENERGY USE IN HYDERABAD



RATIO OF NON RENEWABLE RESOURCES TO
RENEWABLE RESOURCES:

3.27:1

GROWING POPULATION REQUIRES MORE ENERGY
RURAL TO URBAN SHIFT IS LEADING TO INCREASE IN
ENERGY LEVELS

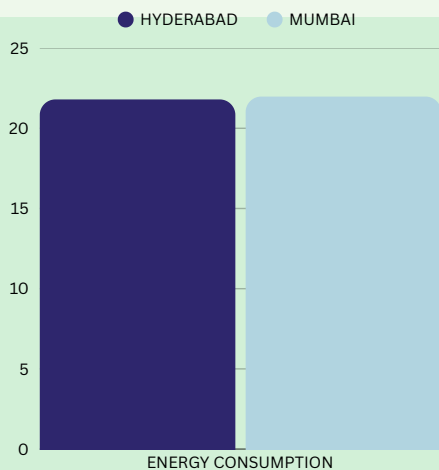


RATIO:

2.9 : 1

THIS IS LESS THAN INDIA'S
AVERAGE:

Hyderabad receives over 300 sunny days per year, ideal for solar energy.
State policies and incentives encourage adoption of renewables
Telangana's Clean & Green Energy Policy 2024
Companies like Ecoren and GPSR Arya investing ₹29,000 crore in green energy.



IT IS LIKELY THAT
HYDERABAD WILL
OVERTAKE MUMBAI by 2025

carbon footprint data in Hyderabad



Transport causes 55% of emissions

Per-capita emissions: .133 tonnes
of CO₂

Lakes now emit methane, no longer act
as carbon sinks.

**Hyderabad is reducing its carbon
footprint through greenery, clean
transport, and sustainable planning.**

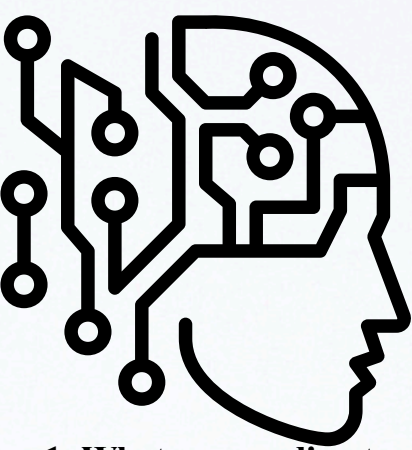
WAYS TO IMPROVE

Expand Renewable Energy
Policy and Investment Support

Raise Awareness and Education

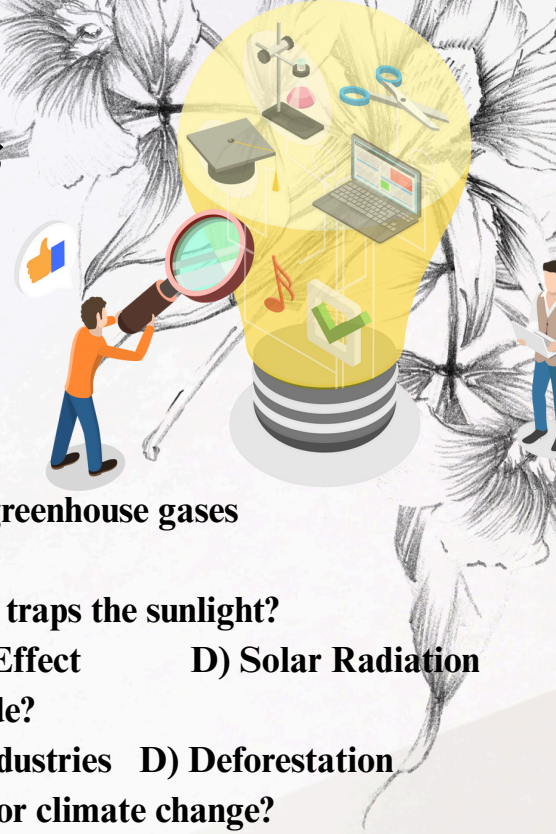
Improve Power Storage and Grids

By: Nithika, Grade: 10-C



Mind Matters! **Quizzes and Riddles**

Quiz Series-1



1. What causes climate change?

- A) Solar Radiation B) Volcanic Activity C) Emission of greenhouse gases
D) Deforestation

2. What is the natural occurrence in which the Earth's atmosphere traps the sunlight?

- A) Ozone Depleting B) Global Warming C) Greenhouse Effect D) Solar Radiation

3. What activity done by humans produces the most carbon dioxide?

- A) Burning down Fossil Fuels B) Transportation C) Building Industries D) Deforestation

4. What is the most important Greenhouse gas that is responsible for climate change?

- A) Methane B) Nitrous Oxide C) Carbon Dioxide D) Water Vapour

5. What is the term for the increase in the Earth's Temperature?

- A) Greenhouse effect B) Carbon Effect C) Greenhouse gas D) Global Warming

6. Which of these helps in deforestation and increase of greenhouse gases?

- A) Afforestation B) Reforestation C) Clearing Land for agriculture D) Sustainable Logging

7. What is the most abundant greenhouse gas on Earth?

- A) Carbon Dioxide B) Water Vapour C) Methane D) Carbon Monoxide

8. Which of these is a Greenhouse Gas?

- A) Oxygen B) Nitrogen C) Neon D) None of the above

9. Which of these is a Greenhouse Gas?

- A) Oxygen B) Nitrogen C) Neon D) None of the above

10. Which of the following is a renewable energy source that helps reduce greenhouse gas emissions?

- A) Coal B) Oil C) Wind power D) Natural gas

11. Which one of the following is an important heat trapping gas?

- A) Nitrogen B) Oxygen C) Carbon dioxide D) Hydrogen

12. What is the full form of IPCC?

- A) Intergovernmental Panel on Climate Change B) International Panel on Climate Change
C) Intergovernmental Protocols on Climate Change D) International Panel on Climate Conservation

13. Which one of the following is a result of climate change?

- A) Adequate rainfall B) Pure air C) Deficiency of freshwater D) Less soil pollution

14. In which year did the Pacific Ocean have the most serious death of corals?

- A) 1984 B) 1997 C) 2001 D) 2004

15. World Health Organisation stated that climate change is not dangerous to humans.

- A) False B) True



- By: Purvi Khumanthem, Grade: 6-D**



Riddles Series-1



**1. I fly high without a wing,
Making energy is my thing.
I spin and spin with the wind's might,
Creating power day and night.**

**2. Don't throw me in the bin so fast,
Reuse me well, and I will last.
I'm not just trash—
I'm Earth's best friend,
Recycle me, that's the trend!**

**3. I stand tall and never walk,
I don't talk, but birds may squawk.
I clean the air and give you shade,
Protect me, so I don't fade.**

**4. I melt ice and make seas rise,
I'm caused by gases in the skies.
Hotter days are my sign,
What's my name? Give me a line!**

**5. I have two wheels, I make no sound,
I help you ride all around.
No petrol needed, I am clean,
Ride me to keep the Earth green!**

**6. I soak up sunlight all day long,
Turning rays into power strong.
On your roof I quietly stay,
Lighting homes the eco way.**

**7. I fall from clouds silver and clear,
Catch me, save me, have no fear.
Store me away for plants to sip,
What am I on this watery trip?**

**8. I'm a pile that likes to rot,
Veggie scraps go in my pot.
I become soil, dark and sweet,
Helping gardens grow to eat.**

**9. I'm a shield up in the sky,
Blocking UV as time goes by.
Holes in me cause sunburn stings,
Name this blue layer with protective wings.**

**10. I hum quietly along the street,
No tailpipe fumes where kids meet.
Plug me in to fill my tank,
Then drive me clean from bank to bank.**

By: Harini, Grade 6-J



Riddles Series-2



- 1. I grow in the sky, but I am not a bird. I fall to the ground, though I utter no word. I can be gentle, a soft, misty veil, or a furious storm, with wind and with hail. What am I ?**
- 2. I am blanket unseen, holding warmth to the land. Too much of me makes the future feel unplanned. I am made of gases, some natural, Some new. What am I?**
- 3. I once stood tall, in forests so grand, then I was burned, by human hand. Now I rise to the sky, a gas, clear and light, trapping the suns warmth, both day and through night. What am I?**
- 4. I melt on the mountains, I vanish from poles. My shrinking makes ocean rise, taking their tolls. I once covered vast lands, in ages long past. What am I?**
- 5. I power your lights and your swift moving car, but my smoky breath travels widely and far. I was formed underground, for millions of years. What am I?**
- 6. I capture the sun, with a blade or a spin. I offer clean power, where Problems begin. No smoke do I make, no fumes do I send. What am I?**
- 7. I rise from the ocean, as temperatures climb. I lash at the coastline, a Threat of our time. With wind and with water, I bring mighty fear. What am I?**
- 8. I absorb the carbon, from air, land, and sea. Without my green presence, where would we be? I breathe out the oxygen, vital and pure. What am I?**
- 9. I am a line on a graph that keeps going up. I signify warmth, filling natures own cup. From year to year, I continue to climb. What am I?**
- 10. I am a change that's global, affecting each clime. From heatwaves to flood, I challenge our time. My causes are many, from factories to farms. What am I?**

By: P. Tejaswini Sai, Grade: 6-J



Riddles Series-3



- 1. I am an organism that acts to protect nature,
but secretly destroying nature. Who am I?**
- 2. I used to be a reliable, cool friend,
but now I am in constant heated argument with the one which caused me to get hotter.
who am I?**
- 3. I am the invisible extra heater, you keep releasing on the planet which is already sweating.
You jump into cars or use AC which somehow releases me. I change the climate because of
your carelessness and later blame nature.
who am I?**
- 4. I drink in carbon you emit, a silent, green heart,
I give you food, oxygen, cool breeze without expecting nothing from you,
But you chop me down. Who am I?**
- 5. I am caused when oceans expand and glaciers to melt,
because of global warming due to human activities, thinking for their comfort,
They are the reason for my cause, but they blame the nature. Who am I?**
- 6. There is a footprint named after gas.
but it is neither H₂O Footprint nor ecological footprint.
Try to guess who am I? (clue-greenhouse gases)**
- 7. I was buried deep inside the ground
Later I was found
Thought, for my help for humans, I will be crowned,
But I am lacking all around,
Now I am burning for your world, as the climate turns around. Who am I?**
- 8. I change my mood every season,
Bringing you warmth, then cold, for many reason
I dictate what you wear and where plants grow,
But not dictator as of north korea. Who am I?**



ARCHANA SORENG INDIGENOUS VOICE FOR CLIMATE JUSTICE



Location: Kandhamal, Odisha, India
Community: Khadia (Munda Tribe)
Global Role: UN Youth Advisory Group on Climate Change (2020)

Introduction: A Voice from the Forests

In the verdant, yet increasingly threatened forests of Kandhamal, Odisha, a powerful advocate for climate justice has emerged — Archana Soreng. A proud member of the Khadia Indigenous community, Archana's life has been shaped by nature and guided by ancestral wisdom. Her journey from local custodian to global climate leader is a testament to the power of rooted knowledge and determined activism.

The Challenge: Disproportionate Minimal Representation

Despite being the original stewards of the Earth, Indigenous communities like Archana's are disproportionately affected by climate change. Erratic monsoons, prolonged droughts, and rampant deforestation threaten both their livelihoods and ecosystems. Yet, ironically, these communities are often excluded from policy-making and international discussions that determine their future.

A Childhood Shaped by Nature and Legacy

Archana's passion for the environment was deeply influenced by her upbringing. Her grandfather and father, respected community leaders, instilled in her a deep reverence for the land and a responsibility to protect it. She grew up witnessing firsthand how climate disruptions were destabilizing their traditional way of life — and how knowledge passed through generations could offer solutions.

Realization: The Gap in the Global Climate Dialogue

As Archana observed international climate discussions, she noticed a critical void — the absence of Indigenous voices. While policymakers debated technologies and emissions targets, the lived experiences and sustainable practices of frontline communities were being ignored. She realized that true climate resilience required more than science; it demanded justice, inclusion, and Indigenous knowledge.



Action: From Documentation to Mobilization

Determined to bridge this gap, Archana began documenting traditional ecological knowledge — from forest management to water conservation and climate resilient farming. These practices, perfected over centuries, offered nature-based low-cost solutions. Her work gave visibility to community wisdom often sidelined in mainstream narratives. She expanded her advocacy by connecting with Indigenous youth and leaders across India, creating a shared platform for collective action. These network strengthened their voices and highlighted the universality of their challenges — and the relevance of their solutions.

Global Recognition: From Odisha to the United Nations

In 2020, Archana's relentless efforts were recognized on the global stage when she was selected as one of seven members of the United Nations Secretary General's Youth Advisory Group on Climate Change. She stood out as the sole representative from Asia and from an Indigenous background — a momentous breakthrough for her community. This platform allowed her to bring Indigenous perspectives directly to global decision-makers. She emphasized that land rights, forest conservation, and traditional knowledge must be central to climate policies — not after thoughts.

Advocacy at the Highest Level

At the UN, Archana became a bridge between grassroots wisdom and global policy. She called for: Direct climate finance for Indigenous communities Protection of land and forest rights Inclusion of traditional knowledge in climate adaptation strategies Her voice became a reminder that justice and sustainability are inseparable — and that ignoring Indigenous peoples means overlooking some of the most effective, ethical climate solutions available.

Conclusion: A Hopeful Future Rooted in Tradition

Archana Soreng's journey is a powerful reminder that effective climate leadership can emerge from the heart of tradition. Her life proves that young people, deeply connected to their cultural heritage and empowered with global platforms, can transform the climate conversation. In amplifying Indigenous voices, Archana is not just advocating for her people — she is reshaping the global narrative of climate justice. Her work inspires hope for a more inclusive, resilient, and equitable future for all.

Written By:

Abhigna Reddy & Vennela Tataa, Grade IX-D

Answer Keys of Quizzes and Riddles



Quiz Series-1

- 1Q) Option C
- 2Q) Option C
- 3Q) Option A
- 4Q) Option C
- 5Q) Option D
- 6Q) Option C
- 7Q) Option B
- 8Q) Option D
- 9Q) Option B
- 10Q) Option C
- 11Q) Option C
- 12Q) Option A
- 13Q) Option C
- 14Q) Option B
- 15Q) Option A

Quiz Series-2

- 1Q. Option B
- 2Q. Option C
- 3Q. Option A
- 4Q. Option B
- 5Q. Option D
- 6Q. Option B
- 7Q. Option B
- 8Q. Option C
- 9Q. Option C
- 10Q. Option C

Riddle Series-1

- 1. Wind turbine
- 2. Recyclable item (or) Recyclable material
- 3. Tree
- 4. Global warming
- 5. Bicycle
- 6. Solar panel
- 7. Rainwater (or) Rain
- 8. Compost (or) Compost pile
- 9. Ozone layer
- 10. Electric vehicle (EV)

Riddle Series-2

- 1. Precipitation
- 2. Green House gases
- 3. carbon dioxide
- 4. Glacier [Ice or /ice caps]
- 5. Fossil fuels
- 6. Renewable energy [specifically solar or wind power]
- 7. A hurricane [typhoon/ cyclone]
- 8. Trees
- 9. Global Warming
- 10. Climate Change

Riddle Series-3

- 1. Humans
- 2. The earth's temperature
- 3. Greenhouse gases
- 4. Forests
- 5. Floods
- 6. Carbon foot prints
- 7. Fossil fuels
- 8. Climate

The background features a light blue grid pattern that recedes into the distance, creating a sense of depth. Overlaid on this are several large, flowing, teal-colored shapes that resemble stylized waves or abstract architectural elements. The text is centered in a bold, dark teal serif font.

TEACHER LED INVESTIGATORY RESEARCH

Abstract

Algal biofuels represent a promising solution to sustainable energy challenges due to the high growth rates and lipid accumulation capabilities of various microalgae species. This paper presents a comprehensive, data-based analysis of different algal strains used in biofuel production, focusing on their lab-reported growth rates, lipid content, and oil productivity. Several peer-reviewed sources were examined to compare the oil yield potential of species such as *Nannochloropsis* sp., *Chlorella* sp., *Scenedesmus* sp., and *Botryococcus braunii*.

Introduction

In recent years, microalgae have emerged as a viable third-generation biofuel source due to their fast growth, high photosynthetic efficiency, and remarkable capacity for lipid accumulation (Chisti, 2007; Brennan & Owende, 2010). Algae consume 1.8 kg of CO₂ per kg of biomass, effectively offsetting industrial carbon emissions. Unlike terrestrial energy crops, algae do not compete with food crops for arable land and can utilize saline or wastewater for cultivation (Mata et al., 2010). This study provides a data-driven comparison of microalgal species for biofuel purposes, emphasizing oil yield under laboratory conditions and controlled environmental stress. The analysis includes insights into cultivation conditions, genetic enhancements, and environmental impacts. The study concludes with a comparative assessment of species best suited for scalable biofuel production.

Methodology

This research adopts a systematic review method to extract data from several peer-reviewed articles accessed via Google Scholar, PubMed, and FAO databases.

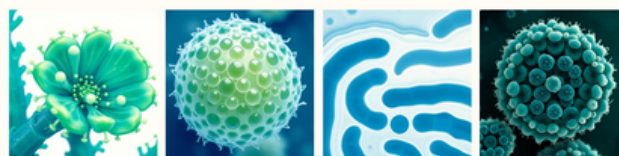
Parameters analyzed include:

- Specific growth rate (day⁻¹)
- Biomass productivity (g/L/day)
- Lipid content (% dry weight)
- Lipid productivity (mg/L/day or g/m²/day)

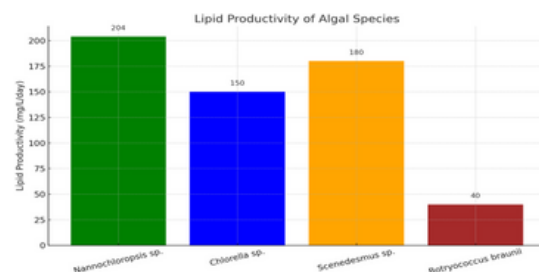
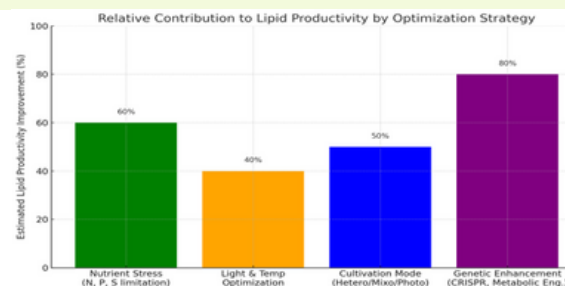
Only studies with well-documented culture conditions (light, temperature, nutrient levels) and reproducible results were included.

Key Algal Species Analyzed

Several microalgae species were central to our study. Each exhibits unique characteristics. These make them suitable for biofuel production. We compared their oil yield potential.



Species include *Nannochloropsis* sp., *Chlorella* sp., *Scenedesmus* sp., and *Botryococcus braunii*.



Results & Discussion

Our data-based analysis reveals significant variations. Oil yield potential differs among species. Cultivation conditions also play a crucial role. *Nannochloropsis* sp. shows the highest oil yield. *Scenedesmus* sp. also demonstrates strong potential.

Cultivation Conditions and Yield Optimization: Several cultivation conditions like nutrient stress, light and temperature control, cultivation mode, and genetic enhancement were seen to impact lipid productivity in microalgae. Values are indicative estimates based on literature reviews (Khozin-Goldberg & Cohen, 2006; Wang et al., 2008; Perez-Garcia et al., 2011; Kaye et al., 2022).

While *Botryococcus braunii* excels in oil content, its low growth rate hinders scalability. *Nannochloropsis* strikes the best balance between productivity and resilience. *Chlorella* protothecoides and *Scenedesmus* offer versatility under varying cultivation conditions, making them ideal for cost-effective scale-up. Advances in genetic engineering further boost yield potential while minimizing environmental trade-offs.

Conclusion

Based on comparative data, *Nannochloropsis* sp. and *Chlorella* protothecoides emerge as the most promising candidates for commercial algal biofuel production due to their favorable growth and lipid profiles. Future research should focus on integrating metabolic engineering with large-scale photobioreactor systems to enhance viability.

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EXPOSURE OF MICROPLASTICS TO TEENAGERS

Author: Sahana Maskikar, K. Nitish Rao, D. Rudra Savarni – Grade XII-A

Guided By: Mrs.Soma Goswami.

Abstract

The widespread presence of polystyrene microplastics in the environment, and their accumulation has led to their recognition as a major global ecological problem. Researches show increased levels of human exposure through ingestion, inhalation, and dermal contact, especially among adolescents. This study aims to evaluate teenage exposure and awareness about microplastics around them, with special emphasis on lifestyle factors, health inference and mitigation strategies.

Introduction

Microplastics originate either as primary microplastics, that are engineered as tiny non biodegradable particles, or as secondary microplastics, that fragment down from larger plastic particles. Recent evidence confirms that these particles are also present in drinking water, food, household dust, and even in the human biological systems such as blood, lungs, placenta and brain. The ability of microplastics to accumulate and bind to toxins, poses considerable risks to the environment and public health. Inhaled microplastics get deposited in lung tissue, causing inflammation and chronic respiratory conditions. Ingestion of microplastics through food and beverages leads to gastrointestinal damage. Studies have shown that these particles also induce oxidative stress and cellular toxicity.

Survey Findings and Data Analysis

To quantify adolescent exposure and assess awareness, a structured survey was conducted amongst grade 11 and grade 12 with about 100 participants. The questionnaire focuses on three major exposure routes, i.e ingestion, inhalation, and dermal contact, along with environmental awareness and daily lifestyle habits.

Key takeaways from the survey

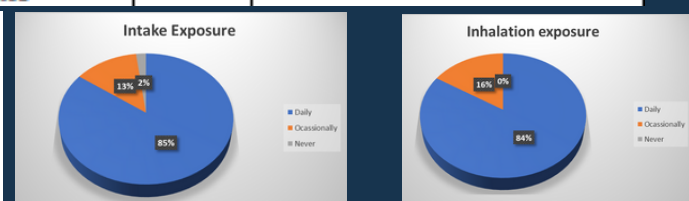
Analysis of the responses revealed that ingestion was the most common exposure pathway. Inhalation was reported as a second common exposure route, particularly among individuals spending time in closed environment where synthetic fibers and dust particles are prevalent. Dermal contact through personal care products was also reported as a frequent exposure cause. The data indicated that while a majority of participants were generally aware of the term 'microplastics', a significant number lacked knowledge about their sources especially inhalation and dermal exposures, their lethal disadvantages and diminution methods. These results confirm the critical role of lifestyle in shaping microplastic exposure risk and highlights the need for enhanced awareness outreach.

	Exposure		exposure		Exposure	
Daily	85%	Plastic food containers, disposables	84%	Closed AC rooms, party foams, paint smell, dust.	79%	Synthetic clothes, Cosmetics like lipsticks, fairness cream, Hair gel, Sunscreen etc.
Occasionally	13%	Disposables	16%	Avoid Closed AC rooms, dust.	21%	Avoid wearing synthetic clothes but mostly exposed to cosmetics
Never	2%	Avoid eating in plastic containers disposables.	0%	Exposed to one or other sources mentioned	0%	Exposed to one or other sources mentioned.

Mitigation Strategies:

Systemic policy changes as well as individual lifestyle adjustments are needed to address the problem of microplastic exposure. Adolescents should be encouraged to wear clothing made of natural fibres rather than synthetic fibres. Additionally, consumers should be taught to look for common microplastic components like polyethylene and polypropylene on product labels and select alternatives, free of microplastics.

By incorporating microplastic education into the curriculum, banning usage of plastic food containers and water bottles in campus, educational institutions can play a significant role in controlling microplastic exposure to young students.. Local governments ought support public awareness initiatives about sustainable practices and impose restrictions on the use of single use plastic and microbeads in cosmetic and personal care products.



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A Scientific Case Study on Soil Contamination from Industrial Activities in India: Monitoring and Remediation Strategies

Authors: Kuja Gupta and Mehak Barnwal, Grade: 9-F

Guided by: Dr. Monideepa Mukhopadhyay

Abstract

This paper provides a comprehensive review of industrial soil contamination in India, primarily caused by pollutants such as heavy metals, hydrocarbons, and other toxic compounds. It explores the major sources of contamination across various industrial sectors, evaluates current methods used for monitoring and assessing soil pollution, and critically examines a range of remediation technologies suited to the Indian context.

Introduction

Industrial growth in India has caused widespread soil contamination, threatening agriculture, food safety, and public health. Unlike air and water pollution, soil degradation is slow and persistent. Protecting soil quality is crucial for economic and environmental stability.

Results and Discussion

A. Monitoring & Impact

1. Lab and field tools help detect industrial pollutants that damage soil health and carbon storage.
2. Remote sensing and bioindicators reveal vegetation loss and ecosystem stress caused by soil contamination.

B. Remediation & Climate Links

1. Physical and chemical remediation methods remove pollutants but often disturb carbon-rich soil and release emissions.
2. Biological methods use plants and microbes to restore soil fertility and naturally enhance carbon sequestration.
3. Emerging technologies like nanotech and electrokinetics offer faster, low-emission cleanup but require careful evaluation.

C. Case Studies & Policy

1. Industrial regions such as Vapi and Kanpur face long-standing soil pollution from untreated industrial waste.
2. Current environmental laws address pollution broadly but overlook soil contamination and its climate impacts.
3. National programs support soil health but need stricter enforcement and better coordination with climate goals.

D. Challenges & Solutions

1. High remediation costs, limited rural technology, and poor data continue to delay effective action.
2. India needs a dedicated soil pollution law, community involvement, and climate-smart soil management practices.

Conclusion

Industrial soil contamination in India is a complex, multifaceted issue requiring a multidisciplinary approach. Advanced monitoring technologies combined with cost-effective remediation and strengthened policy frameworks can safeguard soil health. The integration of scientific innovation with community engagement and governance reforms is vital for sustainable land management.

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Methodology

All information in this study was collected through online research using credible sources such as peer-reviewed journals, government websites (e.g., CPCB, MoEFCC), environmental databases, and published case studies.



1. Literature Review

- Conducted a thorough online review of academic papers, CPCB reports, and environmental assessments..

2. Case Studies & Policies

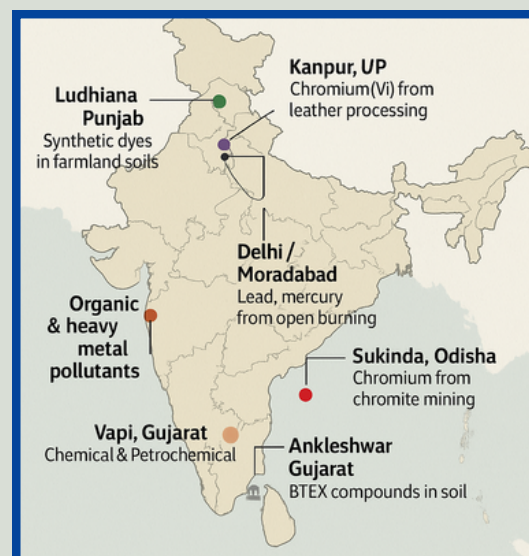
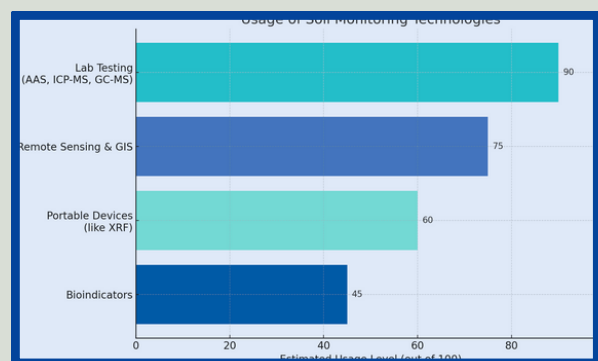
- Referred to online case studies from regions like Sukinda, Kanpur, Vapi, and Delhi.

3. Monitoring & Remediation

- Analyzed monitoring and remediation strategies.

4. Source Identification

- Identified major industrial pollution sources .



Teacher's Corner

As a science teacher, I spend my days explaining how nature works – the water cycle, the greenhouse effect, the balance of ecosystems. But lately, I find myself teaching more about what's going wrong than what's going right.

My students ask me, "Ma'am, why are summers getting hotter?" Or "Why do floods happen so often now?" I see worry in their eyes, and honestly, I share it. Because climate change is no longer a chapter in a book – it's a reality we're all living

I feel responsible – not just as a teacher, but as a citizen, and more deeply, as a mother.

What kind of future are we handing over to our children?

Rising temperatures, polluted air, vanishing forests – these are warning signs. And behind every warning is a family losing their home, a farmer losing crops, or a child struggling to breathe.

But I still believe in change.

At our school, we've taken steps – small but meaningful ones.

- * We started the tradition of planting a sapling on every student's birthday, turning special moments into greener tomorrows.

- * We proudly hold the Green Flag awarded by the Centre for Environmental Education – a recognition of our continued commitment.

- * We actively participate in Haritha Haram, contributing to large-scale afforestation efforts.

We compost, lead eco projects, and encourage hands-on sustainability learning.

As an Eco-School, our commitment goes beyond planting trees. We've embraced a holistic approach to sustainability – encouraging mindful waste practices, promoting clean and healthy habits, conserving energy and water, and nurturing the biodiversity around us.

These values are woven into our daily routines, projects, and celebrations, helping our students grow into environmentally conscious individuals who don't just learn about the planet – they care for it through action.

Because environmental education is not just about lessons in the classroom – it's about learning by doing, by caring, and by growing together.

I tell my students:

"Science doesn't just explain the problem – it also shows us the solutions."

But action begins with awareness.

So today, as a teacher and a human being, I ask you –

Let's act. Let's learn. Let's care – before it's too late.

Because this classroom we call Earth needs all of us to protect it.

"Be the change to stop climate change!"

**By: Ms. Nivedita Rai,
Science Facilitator,
Delhi Public School, Nadergul**





Teacher's Corner

In the rapidly evolving landscape of the 21st century, science education is undergoing a revolutionary transformation. As Artificial Intelligence (AI) becomes deeply integrated into industries, healthcare, agriculture, and even everyday life, science education must adapt to prepare learners for a future driven by data, automation, and intelligent systems. The traditional chalk-and-talk model is giving way to dynamic, technology-enhanced learning environments that foster creativity, critical thinking, and problem-solving skills.

Another important development is the integration of interdisciplinary learning. The boundaries between physics, biology, chemistry, computer science, and mathematics are increasingly blurred. To solve global challenges—such as climate change, pandemics, or food security—students must be equipped with a holistic understanding of science. Education systems are now focusing on STEM (Science, Technology, Engineering, and Mathematics) education, and expanding it further into STEAM by adding Arts, to nurture innovation and ethical thinking alongside technical skills.

Moreover, digital tools such as virtual labs, simulations, and augmented reality are transforming science classrooms. These technologies allow students to conduct experiments in virtual environments, manipulate molecular structures, or visualize astronomical phenomena—all from a computer or mobile device. This not only enhances understanding but also makes science accessible to learners in remote or under-resourced areas.

A pressing challenge in today's AI-driven world is the ethical and responsible use of technology. Therefore, modern science education must also instill values of integrity, sustainability, and social responsibility. Students must learn not only how AI works, but also how it impacts society, jobs, privacy, and decision-making.

In conclusion, science education in the AI era is more than just learning formulas and facts—it's about nurturing curiosity, resilience, and a lifelong love for discovery. By embracing technological tools, interdisciplinary approaches, and ethical perspectives, science education can empower the next generation to meet the complex challenges of our world with confidence and compassion.

**By: Mr. Ram Reddy,
Senior Chemistry Facilitator,
Delhi Public School, Nadergul**

PULSE



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