Miranda House
UNIVERSITY OF DELHI

Environmental Policy of Miranda House

Environmental consciousness has long been a part of the Miranda House ethos. The college is committed to the *Swachh Bharat* campaign and in addition to ensuring a clean campus is constantly working on a college community *Clean Environs Campaign* titled *Swachh Parisar Abhiyan.* The entire Miranda House community follows the *Clean Miranda Green Miranda* tagline.

Under the various *Green Initiatives* at Miranda we segregate waste – biodegradable, non-biodegradable, paper, e-waste, sanitary waste and recycle whatever is possible. The *3R - reduce, reuse, recycle* idea has expanded to *6R – reduce, reuse, recycle, recover, re-create, refuse!*

MH-Vatavaran, the Environment Society of Miranda House, was founded in the late 1990's with motivation and encouragement from the well-known environmentalist Dr. Iqbal Malik. Its name was inspired by the name of Dr. Malik's organisation, *Vatavaran.* The Society provides a platform for members of the Miranda House family, including students from all courses, faculty and non-teaching staff with a shared concern about the environment. It helps students to take stands on serious environmental issues, develop arguments to support their position and take action in some form. During the pandemic years, the students have worked proactively in their neighbourhoods.

Mission Statement

Miranda House is dedicated to enhancing environmental consciousness and furthering sustainable development. Our commitment to the cause is shared by all stakeholders, including our students, faculty members and non-teaching staff. We adhere to all the applicable environmental regulations, and promote environmental awareness and conservation in order to accomplish holistic development.

Under the *Swachh Bharat Abhiyan* campaign of the government, several teams of municipal officials participating in the National Institute of Urban Affairs (NIUA) training programmes and workshops have visited the Miranda House Recycling Unit to observe its working as a Best Practice of Solid Waste Management by institutions and municipal corporations across India.

Elements

The environmental policies of Miranda House focus on the following elements aligning with its commitment to sustainable development:

- **Energy conservation**
- **Use of renewable energy**
- **Water harvesting**
- **Grey Water Harvesting**
- **Reduce, reuse, recycle**
- **Efforts for Carbon Neutrality and Plantation**

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- **Safe Laboratory Practices**
- **Waste Management**
- **Hazardous waste management**
- **E-waste management**
- **Plastic waste management**

Energy conservation

The architectural design of the college building optimally utilises natural light. The original set of buildings have 13 inch brick walls made of lime and sand in lieu of cement and the rooms are buffered by long and wide corridors. Each room is well ventilated with large windows and high ceilings. Across the college campus, such as classrooms, laboratories, administrative block, library lights and fans are switched on only in the occupied areas. Motion sensor enabled lights in the faculty rooms, lecture theatres and laboratories in the new building ensure that no lights are on when the rooms are empty.
Apart from maximising natural light, in the newly refurbished buildings and old buildings alike, the college has implemented a number of measures for energy conservation– turning off lights and fans when not in use, minimising use of water, using LED bulbs, and installation of solar energy panels. The college emphasises on awareness programs vis-a-vis energy conservation to bring about behavioural changes amongst students, non-teaching staff and teaching staff.
We have room air conditioning in lieu of central air conditioning as well as reflective coating on windows for insulation. The Bureau of Energy Efficiency (BEE) star rating is consulted for all purchases of devices like refrigerators, air conditioners, etc.
The college and residential areas (hostel, teachers' flats, non-teaching flats) alike, strive to follow the principles of energy conservation.

Use of renewable energy

The hostel has installed seven Solar Water Heaters on the roof to cater to the needs of the residents and the hostel kitchen.
The college has installed forty Solar Street Lights. Installation of 20 Solar Street Lights was facilitated by a MoU with M/s Sonen who have installed and maintain the luminaries.
Installation of another 20 Solar Photovoltaic Street Lights of capacity 20 Wp SPV has been facilitated by a MoU with KPMG Foundation which has funded the cost of the project.
In 2015, the College was sanctioned a project titled *3R – Reduce, Reuse, Recycle* under the DU Star Innovative Projects Scheme. Using the project funds, the college installed a roof-top solar power plant which supplies power to the recycling units for paper and the composting unit for converting the biodegradable waste from the Hostel mess and the college Café to organic compost. The excess power generated by this solar power plant fed back into the grid. The electricity bills of the college reflect the benefit of net-metering.
The college is making an effort to enhance its solar power generation to enable further use of the renewable energy.

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Water Harvesting

Water conservation and recharge is of utmost importance to ensure water security in our country and to protect lives and livelihoods. To conserve rain water, under the *Catch the Rain Initiative* Miranda House has been effectively and efficiently maintaining a rain water harvesting system since 2019. This rain water harvesting system having a high capacity of two lakh litres, with three collecting tanks, is located underground near the sports complex of the college. The water collected here not only recharges the ground water but is also used for irrigation of the flora and fauna of the college.

Grey Water Recycling

Apart from constructively managing the recyclable waste, Miranda House has a small hydroponics unit wherein grey water from the Hostel Mess is recycled. The waste water from the Industrial RO units in the college is channelled into pipes and used for irrigating the lawns.

Reduce, Reuse, Recycle, Recreate, Recover, Refuse

To ensure that the biodegradable waste generated within the College campus does not end up in the local municipal *dhalao*, the college has installed a composting unit. Aerobic composting of biodegradable waste is undertaken on the college premises. The composting unit, supplied by Green Bandhu processes biodegradable garbage, such as food waste from the mess and the College cafe and garden waste, to produce compost which is used in the College gardens.

The environmentally conscious students are also fascinated with the working of the paper recycling plant. Every year a roster is drawn up so that teams of volunteers can provide assistance to the plant operators on a daily basis for making paper and paper products. Under the *DSKC Flavour of Research Summer Internship Programme*, undergraduate students have also taken up summer projects over the years to study various aspects of paper recycling such as:

- use of natural additives like leaves, fruits and petals for improving the appearance, texture and colour of the paper,
- imparting pest-resistance by using *neem* leaves and
- making stronger paper using bamboo shavings sourced from the Shriram Institute of Industrial Research, Delhi.

The composting unit for organic waste in addition to the paper recycling unit are part of the efforts undertaken at MH to become a zero-waste campus and constitute a complete *Recycling Unit for Solid Waste Management*. The organic compost, the recycled paper and the recycled paper products like folders, envelopes, recycled paper sheets are sold at the MH Souvenir Shop.

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Efforts for Carbon Neutrality and Plantation

Efforts towards reducing the carbon footprints include reducing energy consumption, using alternative energy sources and planting trees to absorb carbon dioxide.
Miranda House has rich biodiversity with a commitment to reduce carbon emissions. Tree plantations are carried out in a well-planned manner so as to keep the campus green as well as reduce the carbon footprints.
We also spread awareness about the therapeutic nature of plants by maintaining a Herbal Garden where many important plants like stevia, giloy, curry patta, tulsi, turmeric, basil to name a few are grown. Tree plantation drives are undertaken in the College and in the villages adopted under the *Unnat Bharat Abhiyaan (UBA)*. Many students have adopted a tree in their locality and have pledged to take care of it. The extensive green cover and the innumerable trees on the campus have ensured that the campus is home to many species of birds and butterflies.
Safe Laboratory Practices
The Department of Chemistry has been leading the movement for adopting safe and green practices in the laboratory and the management of chemicals and the chemical waste. The faculty, students and laboratory staff adhere strictly to the Standard Operating Procedure (SOP) to ensure the safe handling of chemicals and laboratory safety. An inventory of all the hazardous chemicals with their Material Safety Data Sheets (MSDS) are kept readily available. The college has invested in installing fume hoods for experiments with volatile chemicals to avoid harmful effects. The college ensures that the fire extinguishers mounted outside the laboratories are maintained in working condition, fully charged and ready for use in an eventuality. All broken glass apparatus is collected in clearly marked bins and sent to glass recyclers for recycling and recovery.
Hazardous Waste Management
The college makes concerted efforts to reduce the generation of hazardous waste and manage all forms of chemical and bio-waste as per prescribed protocols.
Biological Hazards: All microbes, animals, blood, sera, and cells of animal origin could be potentially infectious. Precautions are followed to reduce the potential risk. As part of laboratory protocol, all stakeholders are advised to:

- use gloves while handling potentially hazardous materials,
- autoclave all plastic ware used for storing live samples prior to disposal as general laboratory waste.
- follow extreme caution when handling sharp cutting devices such as microtome blades, scalpel, razor, blade or needles and dispose the same in a Sharps Disposal Container or needle disposal unit.
- use bacterial culture under a bio-safety cabinet and autoclave it before discarding.

Radiation Hazards: Ultraviolet (UV) radiation from low intensity UV lamps is being used in the college to visualize DNA and RNA stained with ethidium bromide. To minimize th exposure, hand held lamps and trans-illuminator are adequately shielded and viewed through a filter or safety glasses. Since this radiation can be mutagenic and carcinogenic, the use of appropriate safety gear is essential. Radioisotopes are not being used in any undergraduate laboratory at the college. However, students are made aware of the hazards of radiation.

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Fire and Electrical Hazards: Power supplies and all electrical equipment pose fire hazard and electric shock hazards, if not used properly. Students are advised not to operate any electrical equipment with wet hands and ensure that storage and handling of flammable solvents is far from any source of an open flame. Specific instructions for using autoclaves and centrifuges are explicitly displayed. Fire extinguishers are kept full and readily accessible for any emergency.

E-waste management

The college periodically disposes off the unserviceable electronic and electrical equipment bought. The process of writing off and safe disposal is diligently followed. All departments and sections using electronic equipment make a list of unserviceable items, giving the details regarding procurement and reasons for write-off. They also mention whether the item falls in any hazardous category and needs special handling. A sub-committee of the Governing Body makes a site visit for physical verification. Then the college seeks permission of the University of Delhi Radiological Officer who verifies the nature of waste personally or through his nominee. Once a clearance certificate is received, the college places the list of unserviceable items for the consideration of the Governing Board. On receipt of approval, the process of auction is initiated through a public notice inviting Government Certified E-waste Management Firms only.

The college has created a special Store for neat and safe storage of written off equipment and sundry items. Within this area, potentially hazardous items and E-waste is handled carefully following the protocols delineated above. Staff is trained to be cognizant particularly of leaching batteries. The college has separate clearly marked bins for collecting e-waste. These bins have been strategically kept at various places in the campus to enable the Miranda House community to deposit their old phones, printer cartridges, tablets. Safe disposal of the e-waste is done through recognized agencies.

Plastic waste management

The use of single use plastic (SUP) is discouraged in the college café. Members are encouraged to carry their own cups to buy their tea or coffee from the cafe; this reduces the use of disposable cups and glasses. Glass bottles are used to serve drinking water to visitors. Members fill their own personal bottles with RO drinking water available at the water coolers across the campus. Old plastic jars have been converted into plant holders and used in the vertical garden beyond the cafe.

Intended Outcomes

The Miranda House family, across all stakeholders, adheres to the *Clean Miranda, Green Miranda* tagline and makes a concerted effort to **K**eep the **E**nvironment **E**cologically **N**eutral (KEEN)! During the pandemic when many members of the fraternity were working and studying from their homes, students in particular have increased environment awareness in their neighbourhoods. Many members have also planted and adopted trees, taken to home composting of their biodegradable garbage and ensured that the wastage of water in the neighbouring homes and parks due to overflow of tanks is minimised.

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Future Plans

The college has been running short term courses on the environment and has faculty who have participated in a variety of multi-disciplinary research projects related to the environment including biodiversity, therapeutic plants, clean water and the river Yamuna. Using these inputs, we hope to offer short-term research internships and conduct workshops for students as mandated under NEP. We are one of the educational institutions participating in the **L**ittle **B**ook of **G**reen **N**udges (LBGN) UNEP programme. Under this collaboration we hope to bring about a behavioural change across the members of the MH fraternity and spread greater awareness regarding the SDG's too. The Disaster Preparedness Team, the Himalaya Study Circle, Centre for Environmental Studies and Disaster Management along with IBSD Miranda House are planning to conduct workshops and seminars. Under the Government of India's Skill Development Programmes, the college is hoping to become a Skill Hub and train interested participants across all sections of society in the art of recycling used paper and making useful products out of the same.

The college is planning to further minimise the biodegradable waste going to the local *dhalao* by collecting biodegradable waste from the teachers' flats and non-teaching staff flats and converting it into usable organic compost at the composting plant situated in the college. The college has already purchased the covered wheelbarrows to transport the biodegradable garbage from the collection point to the composting plant.

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