K.S.R. COLLEGE OF ENGINEERING

An Autonomous Institution

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K.S.R. Kalvi Nagar, Tiruchengode – 637 215, Namakkal District, Tamil Nadu

DEPARTMENT OF SAFETY AND FIRE ENGINEERING

APEX SAFETY 2025

TECHNICAL MAGAZINE

VOLUME 06, ISSUE 1

DECEMBER 2025

With the Blessings of our Beloved Founder

Lion Dr. K. S. Rangasamy MJF

Founder, KSREI.

Forever in our hearts,

Forever in our thoughts!

K.S.R. COLLEGE OF ENGINEERING

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Chairman Message

Thiru. R. Srinivasan, BBM., MISTE.,
Chairman, KSR Educational Institutions

As we stand on the brink of new beginnings and boundless possibilities, I am filled with an immense sense of pride and optimism about what we can achieve together at KSR Educational Institutions. Our founder, Dr. K S Rangasamy, laid a strong foundation rooted in the belief that education is the most powerful tool to transform lives. Carrying forward his legacy, we remain committed to not just educating but empowering young minds to make a meaningful impact in the world. In today's fast-paced, technology-driven society, the challenges are as dynamic as the opportunities are great. It is imperative for education to transcend traditional learning and encompass the development of holistic, innovative, and critical thinking skills. At KSR, we strive to equip you, our students, with the capabilities to not only adapt to changes but to drive them. We are dedicated to nurturing a generation of leaders, innovators, and thinkers who are ready to take on global challenges with local sensibilities. Making an Impact is not just a phrase—it's our mission. It's about inspiring each one of you to pursue your passions with determination and a sense of responsibility towards the betterment of society. We encourage you to dream big, push boundaries, and question the status quo. Our campus is a melting pot of ideas where your creativity and ambitions are nurtured, allowing you to flourish in ways you never imagined.

With best wishes,
Thiru. R. Srinivasan,
Chairman, KSR Educational Institutions.

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Vice Chairman's Message

Mr. K. S. Sachin, Vice Chairman,

KSR Educational Institutions

At KSRCE, we stand at the intersection of tradition and transformation, committed to shaping a future driven by knowledge, innovation, and values. While our roots are firmly grounded in a legacy of academic excellence, our vision extends beyond boundaries, preparing students to excel in an ever- evolving global landscape. Our goal is to create a dynamic learning ecosystem that fosters critical thinking, technological prowess, and ethical leadership. We envision KSREI as a hub of intellectual growth, where students are empowered with 21st-century skills while embracing the timeless virtues of integrity, perseverance, and service. Looking ahead, we aim to integrate cutting-edge advancements in education, strengthen industry collaborations, and expand global opportunities for our students. With a deep commitment to holistic development, we continue to nurture future leaders who will shape society with wisdom and purpose. Together, we build the future—rooted in values, driven by vision.

With best wishes,
Mr. K. S. Sachin,
Vice Chairman,
KSR Educational Institutions.

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Dean Message

Dr. M. Venkatesan, Dean, KSRCE

As the Dean of KSRCE, I am delighted to extend my warm wishes to the Department of Safety and Fire Engineering on the successful launch of the APEX SAFETY 2025 – Technical Magazine. This commendable initiative reflects the department's strong commitment to promoting knowledge sharing, innovation, and awareness in the critical and ever-evolving domains of safety and fire engineering. The insightful contributions from both students and faculty members featured in this magazine stand as a true testament to their dedication, technical competence, and professional excellence. It is truly encouraging to witness the creation of such a platform that highlights emerging trends, thought-provoking perspectives, and practical, real-world applications related to industrial safety, fire prevention, risk management, and disaster mitigation.

I wholeheartedly encourage students, faculty, and industry professionals to actively engage with APEX SAFETY 2025, utilizing it as a valuable medium to exchange ideas, share best practices, and collaboratively strengthen the safety culture across industries and society. My heartfelt congratulations to the entire team behind APEX SAFETY 2025 for their vision, hard work, and outstanding efforts in bringing out this technical magazine.

With best wishes,
Dr. M. Venkatesan
Dean, KSR College of Engineering.

K.S.R. COLLEGE OF ENGINEERING

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Principal Message

Dr. P. Meenakshi Devi, Principal

K.S.R. College of Engineering

My heartiest welcome to all the young budding Engineers who have joined in "K.S.R. College of Engineering". With the help of highly qualified and dedicated staff members, we will be moulding the students to the required shape which will make them employable. The composite unit of Students, Parents, and Society is our customer. The K.S.R. College of Engineering will strive hard to provide customer satisfaction. In our college, we give top priority to discipline. A series of tests and examinations will be conducted to achieve good performance in the university examinations. An effective Training and Placement (T&P) cell is formed to provide placement to all our students. Importance will be given to extra-curricular and co-curricular activities also. Excellent infrastructure facilities and good learning atmosphere is an added advantage of this great Institute. I hope all the students admitted here will enjoy the four years of study. Let us all work hard to produce the most competent scientists, engineers, Entrepreneurs, Managers and researchers through Quality Education.

With best wishes,
Dr. P. Meenakshi Devi,
Principal,
K.S.R. College of Engineering.

K.S.R. COLLEGE OF ENGINEERING

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Head of the Department Message

Dr. M.Prabu, Professor and Head
Department of Safety and fire Engineering

It is with great pleasure that we present APEX SAFETY 2025, the latest edition of the Department of Safety and Fire Engineering Technical Magazine. Our department is dedicated to advancing safety and fire engineering by combining core engineering principles with cutting-edge practices to make a lasting impact on industries and society. This magazine proudly showcases the research, technical insights, and achievements of our students and faculty, who are committed to promoting safe work environments and sustainable safety practices. On behalf of the editorial board, I am honored to present APEX SAFETY 2025. This magazine serves as a platform for innovative ideas and technical excellence, made possible by the collective efforts of many. I would like to express my sincere gratitude to everyone who contributed to this publication, especially our Chairman for his unwavering support, our Dean for his invaluable guidance, and our Principal for inspiring innovative ideas. I also extend my heartfelt thanks to our faculty coordinators and students for their dedication and hard work in bringing APEX SAFETY 2025.

With best wishes,
Dr. M.Prabu
Professor and Head
Department of Safety and fire Engineering
K.S.R. College of Engineering

K.S.R. COLLEGE OF ENGINEERING

DEPARTMENT OF SAFETY & FIRE ENGINEERING

The Department of Safety and Fire Engineering was established in the year 2020 with an intake of 60 students. The Department of Safety and Fire Engineering was formed with the primary objective of providing world class education in the field of Safety and Fire Engineering, while addressing the problems of today and tomorrow. Right from its inception, the department has been offering excellent infrastructural facilities with various sectors like oil and gas, aerospace, chemical, assembly & manufacturing and construction of safety platforms for aspiring professional students to meet the growing demands of the safety-related concerns in the various industries by proper application of engineering methods for a safe work environment.

The department imparts world class training, research and provides state of the safety equipment's facilities to the students. The department offers the students with constant motivation and support to bring out their talents in curricular, co-curricular, and extra-curricular perspectives, thus, uplifting them into dynamic professionals. Our faculty and staff are our biggest strength, with industrial experience and exposure, specialized in engineering disciplines such as Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering and Safety, and Fire Engineering.

Vision of the Institution

To become a globally renowned institution in Engineering and Management, committed to providing holistic education that fosters research, innovation and sustainable development.

Mission of the Institution

- Deliver value-based quality education through modern pedagogy and experiential learning.
- Enrich Engineering and Managerial Skills through cutting-edge laboratories to meet evolving global demands.
- Empower research and innovation by integrating collaboration, social responsibility, and commitment to sustainable development.

Vision of the Department

To produce recognized Safety and Fire Engineers with pioneering innovative solutions to enhance safety and promote sustainable development.

Mission of the Department

- Impart quality education through student-centered teaching approaches.
- Equip students with the cutting-edge knowledge and skills to address the emerging safety challenges.
- Enhance research and innovation in Safety and Fire Engineering, fostering a culture of safety and sustainability.

Program Educational Objectives (PEOS)

- **Core Competency:** Leverage engineering expertise in fire safety, occupational health, and risk management to provide sustainable solutions for Potential hazards.
- **Professionalism:** Graduates will demonstrate leadership, ethics and teamwork in managing emergency response systems and workplace safety.
- **Career Development:** Graduates will undertake higher studies, research and professional development to meet industry demands in Fire and Safety Engineering.

Program Outcomes (POs)	
PO1	**Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1to WK4)
PO3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO4	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO5	**Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6).
PO6	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO7	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO8	**Individual and Collaborative Team work**: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO9	**Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.
PO10	**Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO11	**Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)
Program Specific Outcomes (PSOs)	
PSO1	**Occupational Health and Industrial Safety:** Identify, assess, and control workplace hazards using risk analysis, safety audit techniques, and legal compliance frameworks to ensure occupational health and safety in various industries.
PSO2	**Fire Protection Systems Design:** Apply principles of fire dynamics, combustion and implement effective fire protection and suppression systems in residential, commercial, and industrial environments.

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CHIEF PATRON

Thiru R.Srinivasan

Chairman, KSR Educational Institution

PATRON

Dr. M. Venkatesan

Dean, K.S.R. College of Engineering

Dr. P. Meenakshi Devi

Principal, K.S.R. College of Engineering

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Dr.M.Prabu

Professor & Head, SFE, K.S.R. College of Engineering

EDITOR

Mr.R.Ashok Kumar

Assistant Professor

Department of Safety & Fire Engineering

K.S.R. College of Engineering

FIRE RISK ASSESSMENT IN RAILWAY TUNNELS BASED ON HUMAN SAFETY ASSESSMENT CRITERIA IN KOREA

Augustin Ronald C, III Year SFE, KSRCE

ABSTRACT:

This study critically examined the ASET/RSET(point) method currently applied in the Republic of Korea's railway tunnel fire safety guidelines and compared evaluation results through simulations that applied the ASET/RSET(map) method and various FED thresholds. The analysis revealed that the estimated number of fatalities varied significantly depending on the assessment method, confirming that the outcomes are highly sensitive to the selected evaluation criteria. While the ASET/RSET (point) method has the advantage of procedural simplicity, it may overestimate fatalities as it does not reflect spatial and behavioral complexities. In contrast, the ASET/RSET (map) method enables a more realistic and accurate assessment by simultaneously considering smoke propagation and evacuee distribution, making it more suitable for the structural characteristics of railway tunnels. This study also emphasizes the necessity of considering irritant gases. While a conservative analysis excluding such gases may still be valid under the FED <0.3 threshold, a more realistic evaluation that accounts for evacuation delays and behavioral impairments caused by sensory irritation suggests the potential appropriateness of applying a dual-criteria framework of FED <1.0 and FIC ≤ 3–5.

REVISITING THE BS 8414 TIMBER CRIB: AN EXPERIMENTAL INVESTIGATION FOR ENHANCING FACADE FIRE SAFETY

Dharsan S, III Year SFE, KSRCE

ABSTRACT:

In the aftermath of the Grenfell Tower tragedy, the fire performance of external wall systems (EWS) and the timber crib fire source specified in BS 8414 have come under increasing scrutiny. This study presents a comprehensive experimental investigation into the burning characteristics and heat exposure effects of the BS 8414 timber crib. A two-scale approach was employed, combining bench-scale calorimetry (ISO 1716) and large-scale testing in both free-burn and chamber configurations, to evaluate the consistency, intensity, and thermal output of the fire source. Key parameters such as heat release rate

(HRR), mass loss rate (MLR), temperature evolution, and incident heat flux on an inert façade were measured. The results demonstrate good repeatability and reveal that the actual heat output often exceeds the standard's prescribed values, exposing the façade to high-intensity thermal loads sufficient to ignite many cladding materials. The findings also indicate that the BS 8414 setup more closely resembles an external fire scenario rather than a post-flashover room fire, due to the chamber's geometry and fuel placement. This research provides valuable benchmark data that may inform regulatory bodies, standardization committees, and engineers, contributing to improved testing methodologies and the development of safer façade fire standards for high-rise buildings.

THE EFFECTS OF THE FIRE SAFETY AT HOME PROGRAMME ON FOUR FIRE SAFETY BEHAVIOURS AMONG OLDER ADULTS

Kaviyadharshini V, III Year SFE, KSRCE

ABSTRACT:

Older adults face an increased risk of injury or fatality in domestic home fires, emphasizing the need to focus on promoting fire safety behaviors within this demographic group. Therefore, the Fire Safety at Home programme was developed. In the effect evaluation, 433 participants (>65 years) participated. Participants in the intervention group received a systematically developed fire safety programme, while the control group received a fire safety programme as is given by the Dutch fire service. Outcome measures assessed four fire safety behaviours (i.e., staying in the kitchen while cooking, not connecting power strips to each other, charging electronic devices, and cleaning the dryer lint filter after every cycle) and key behavioral determinants (attitude, self-efficacy, and risk perception). A measure of behavioral intention was added as a proxy indicator of future fire safety behaviours. Where improvements over time were found for all behaviours in both groups (control- and intervention-group), compared to the control group, the new intervention yielded significant improvement in three out of the four fire safety behaviours. Based on this study, it can be concluded that effectively instigating changes in fire safety behavior among older adults can be achieved by specifically and intensively

DIGITIZED FUEL LOAD SURVEY IN COMMERCIAL AND UNIVERSITY OFFICE BUILDINGS FOR FIRE SAFETY ASSESSMENT

Nathiya S, III Year SFE, KSRCE

ABSTRACT:

Fuel load significantly affects fire development in compartments, and its design value derives from the statistical results of numerous surveys. This work enhances the fuel load database by employing a digitized survey method to assess 27 university and commercial offices in Hong Kong and Mainland, China. The results revealed significant differences in fuel load densities: university offices averaged 382 MJ/m2 (SD: 297 MJ/m2) and commercial offices averaged 1804 MJ/m2 (SD: 1319 MJ/m2). Moreover, it proposed an online questionnaire method to overcome onsite access limitations. Furthermore, it identified higher fuel load densities in commercial offices due to higher paper-made content and greater occupancy density than university offices. The fuel load of university offices was lower than that in previous surveys and design codes, while commercial fuel load was higher. Notably, there is an increasing tendency load density data with a small sample size. Overall, it provides a valuable database for future fire scenario design, fire codes edition, and fire safety assessment and discusses future collaboration with AI applications of fuel load density and plastic combustible composition over the years. Additionally, it considers that Gompertz distribution better fits cumulative probabilities of fuel.

EMPIRICAL ASSESSMENT OF FIRE SAFETY IN HIGH-RISE RESIDENTIAL BUILDINGS IN VIETNAM AND RESIDENTS' KNOWLEDGE AND AWARENESS REGARDING FIRE SAFETY

Harish A, III Year SFE, KSRCE

ABSTRACT:

With increasing population, the demand for high-rise residential buildings has been increasing. The challenges posed by firefighting and evacuation during fires in high-rise buildings have attracted considerable attention. This study explores the fire safety facilities and management in high-rise residential buildings in Vietnam and the knowledge and awareness of residents regarding fire safety. These aspects were assessed using a

questionnaire answered by residents of 32 high-rise buildings in Vietnam. The answers reveal that most residents had basic knowledge of fire safety in high- rise buildings, but their preparedness of a fire event was inadequate. It is recommended that the implementation of safety regulations and measures for reducing the risk of fires in buildings be enforced. Besides analyzing descriptive statistics, a multiple regression analysis was conducted to explore the key factors influencing the level of awareness and knowledge of fire safety among the residents of high-rise buildings. The results indicate that education level, gender, living floor, and participation in fire drills are the key factors influencing residents' levels of knowledge and awareness. The survey results serve as supportive reference for the relevant stakeholders for reducing the risk of fires and the resulting losses. Furthermore, this study offers valuable insights for future studies on high-rise residential buildings in Vietnam at larger scales.

TUNNEL FIRE SAFETY MANAGEMENT AND SYSTEMS THINKING: ADAPTING ENGINEERING PRACTICE THROUGH REGULATIONS AND EDUCATION

Dharaneesh S, IV Year SFE, KSRCE

ABSTRACT:

Society is changing ever faster, and tunnels are complex systems where performance is affected by many different stakeholders. These conditions suggest that safety management needs to be proactive and based on a systems perspective that acknowledges socio-technical theories. Although systems thinking principles are foundational in overarching European regulations and goals, system principles generally don't affect tunnel fire safety design principles or engineering practice. In the countries investigated in this study, tunnel fire safety management (TFSM) builds on experience-based and risk management-based principles that are optimized independently system by system. This is usually done with limited consideration of how these systems are interconnected and affect the overall tunnel system. The purpose of this paper is to investigate how systems thinking could support existing engineering practice. The work presented in this article is the outcome of collaboration between fire safety researchers and practitioners from five countries and three continents. Through three workshops, current TFSM principles have been compiled and discussed.

MODELLING CARBON MONOXIDE TRANSPORT AND HAZARD FROM SMOLDERING FOR BUILDING FIRE SAFETY DESIGN ANALYSIS

Kavenilavan S, IV Year SFE, KSRCE

ABSTRACT:

Smouldering produces massive toxic smoke and carbon monoxide (CO) that is responsible for the majority of fire deaths, but current building fire safety design rarely considers smoldering hazards. This work investigates the transport and hazards of CO from smouldering fire for the building performance-based design practice. The numerical model is firstly validated by reproducing two flat-scale fire experiments, revealing the characteristic surface temperature and CO yield of smouldering sources. The smouldering fire scenario is then designed in an atrium to review the evolution of CO concentration and its associated Available Safe Egress Time (ASET). Results show that a smouldering fire of the same burning rate as a flaming fire not only can provide a similar ASET, but also present a greater threat to occupants and rescue teams by forming a cold layer of lethal CO on the ground. Hence, the smouldering fire scenarios and their CO hazards should be considered in the performance-based design of building fire safety. Simulations also reveal that the smouldering fire can be more dangerous as the atrium height decreases, and ceiling ventilation is particularly effective in extracting CO emissions from smouldering fires.

THE INFLUENCE OF EXPERIMENTAL CONDITIONS ON THE MASS LOSS FOR TGA IN FIRE SAFETY SCIENCE

Kavishal L, IV Year SFE, KSRCE

ABSTRACT:

A thermo gravimetric analyzer (TGA) measures the mass loss of a sample as function of temperature, during a predefined heating program. The results are applied for developing reaction kinetics in fire safety science. It is assumed that the sample and the apparatus are in perfect thermal equilibrium. Therefore, the analysis ignores any apparatus or sample specific aspects. However, different experimental and material parameters, like the reacting atmosphere or sample mass, influence the observed mass loss. This research work illustrates the impact of experimental and material conditions on the measurement results. Polymethyl methacrylate (PMMA) is used for this study because of its important

role in fire safety science. The influence of different atmospheres, sample mass, colour and flow rates was examined in three different TGA devices at heating rates between 2 K/min and 80 K/min. The major difference was observed for different atmospheres, inert versus synthetic air atmosphere. A difference up to 75°C in onset temperature was found. The flow rate does not have any influence under inert atmosphere. The colour of the samples has a small influence on the mass loss rates. When comparing different devices, it was found that the peak temperature differs less than 10°C under inert atmosphere. This contribution discusses and compares the observed influence of the different conditions.

FIRE SAFETY RISKS OF EXTERNAL LIVING WALLS AND IMPLICATIONS FOR REGULATORY GUIDANCE IN ENGLAND

Lavanya M, IV Year SFE, KSRCE

ABSTRACT:

External living walls (LWs) have aesthetic and environmental appeal, but these characteristics must not compromise fire safety. A review of legislation indicates there are no specific fire regulations or test standards for LWs in England. Furthermore, the 2013 UK Green wall guidance document (GWGD) contradicts current guidance in Approved Document B (ADB) for certain categories of buildings, yet ADB cites GWGD as “best practice”. We suggest the recommended reaction to fire testing methodology for LW systems (single burning item (SBI) EN13823/ignitability EN ISO11925-2 tests) is inappropriate for assessing their fire performance. Despite some limitations, the BS8414 full-scale test could be used to assess LW installations. While not identified in the GWGD or specifically recommended within ADB as a suitable test method for LWs, it is arguably more appropriate than reduced scale SBI testing, primarily because it accommodates full LW modules with planting, and uses a more appropriate fire size. To reduce testing costs, we propose the use of CFD fire modelling, or a modified SBI test to identify candidate LW products likely to pass BS8414 testing. Given the inherent variable nature of LWs and their associated fire properties, LW maintenance is considered essential for on-going compliance.

ENVIRONMENTAL SAFETY

Ramprasad M, IV Year SFE, KSRCE

ABSTRACT:

Environmental safety is a critical concern in today's world as the planet faces unprecedented challenges from pollution, climate change, and habitat destruction. It encompasses various practices and measures aimed at preserving and protecting the environment from harmful human activities. These initiatives include waste management, recycling programs, sustainable energy practices, and conservation efforts to safeguard natural resources and biodiversity. Moreover, environmental safety involves the responsible use of chemicals, reducing emissions, and promoting eco- friendly technologies to minimize the ecological footprint. Addressing environmental safety concerns requires global cooperation, stringent regulations, and public awareness campaigns. By promoting eco-conscious behaviors and fostering a culture of environmental responsibility, societies can mitigate the adverse impacts on ecosystems and wildlife. Additionally, investing in research and innovation for green technologies, promoting sustainable agriculture, and implementing renewable energy solutions are vital steps toward a cleaner, healthier planet.

FIRE TUBE SUPRESSION SYSTEMS

Sriramulu G, IV Year SFE, KSRCE

ABSTRACT:

Fire tube suppression systems play a pivotal role in ensuring fire safety by swiftly detecting, containing, and extinguishing fires in various environments. These systems utilize a network of pipes and nozzles strategically placed throughout buildings, facilities, or industrial spaces. When a fire is detected, the system releases a suppression agent, such as water, foam, or gas, directly onto the source, swiftly quelling the flames and preventing the fire from spreading further. The design of fire tube suppression systems considers the specific risks of the environment they protect, ensuring rapid response and minimal damage. These systems are crucial for safeguarding lives, property, and valuable assets, making them integral components of fire safety strategies in commercial, residential, and industrial settings. As technology advances, innovations in fire tube suppression systems continue to enhance their efficiency, making them indispensable tools in modern fire prevention and protection efforts.

FOOD SAFETY

Yogeshwaran R, IV Year SFE, KSRCE

ABSTRACT:

Food safety is a critical aspect of public health and a major concern worldwide. Ensuring the safety of the food supply chain is essential to prevent food borne illnesses and protect consumers. This abstract discusses key principles and practices related to food safety. It emphasizes the importance of proper food handling, storage, and preparation to prevent contamination and the spread of food borne pathogens. The abstract also highlights the significance of stringent regulations, regular inspections, and monitoring of food production processes to maintain high standards of food safety. Additionally, it explores the role of consumer education and awareness in promoting safe food practices at home and in food service establishments. The abstract underscores the need for collaboration among governments, food industries, and consumers to establish and maintain effective food safety measures, ensuring that the food people consume is safe, wholesome, and free from harmful contaminants. Implementing robust food safety protocols is crucial to safe guarding public health and fostering trust in the food supply chain.

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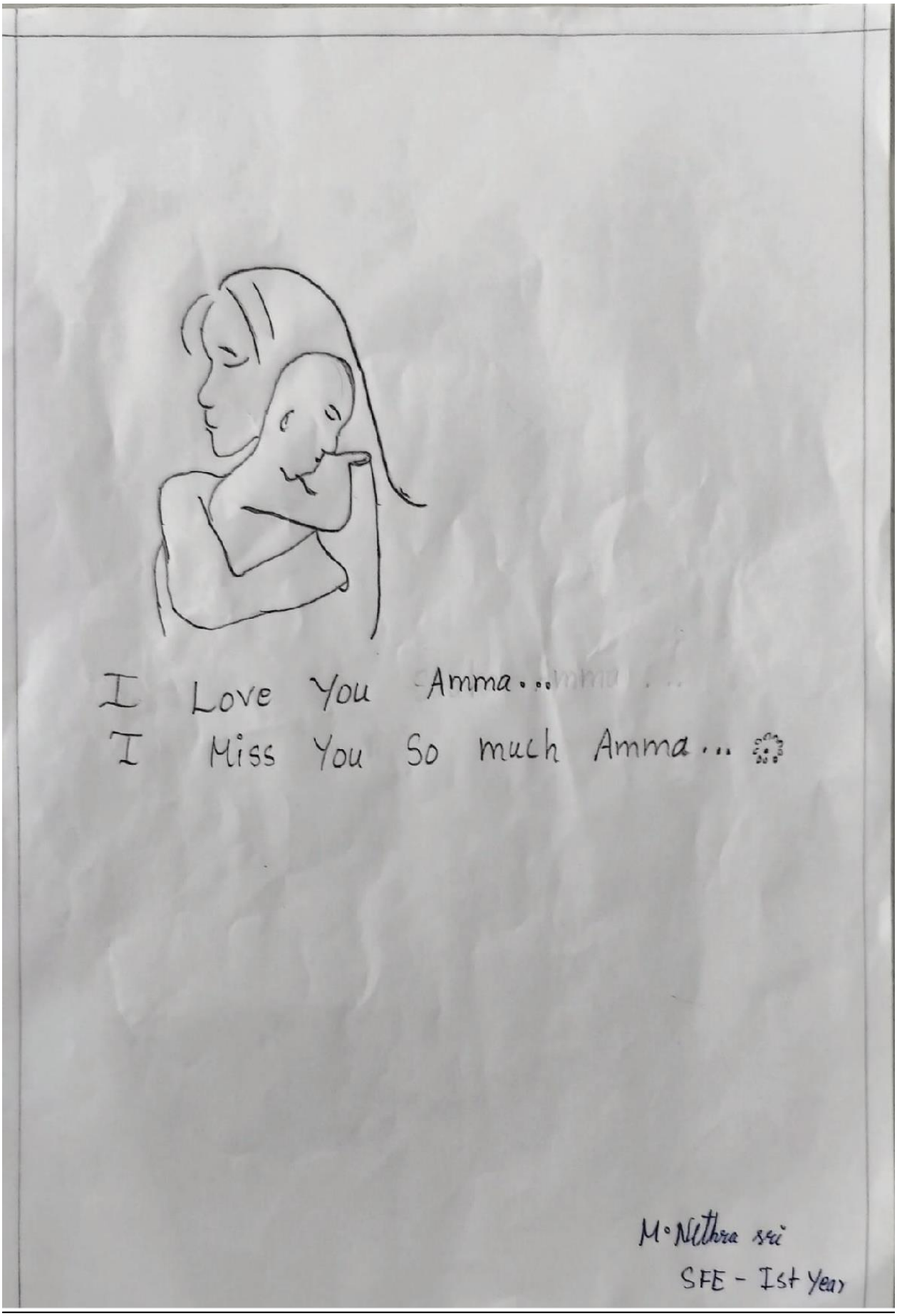
M. Nethra Sri
SFE - Ist Year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I Miss You So much Amma...
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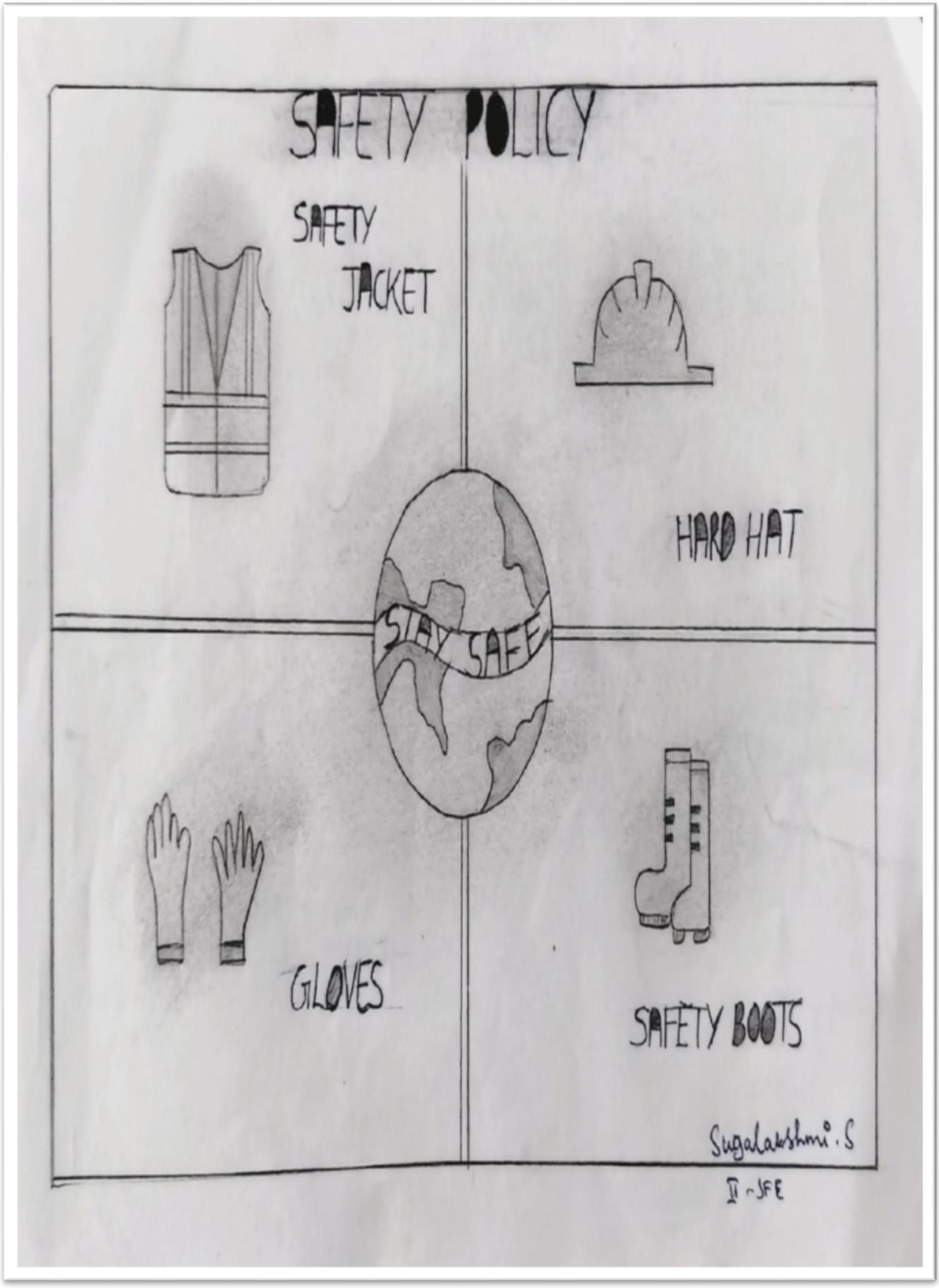
SFE - Ist Year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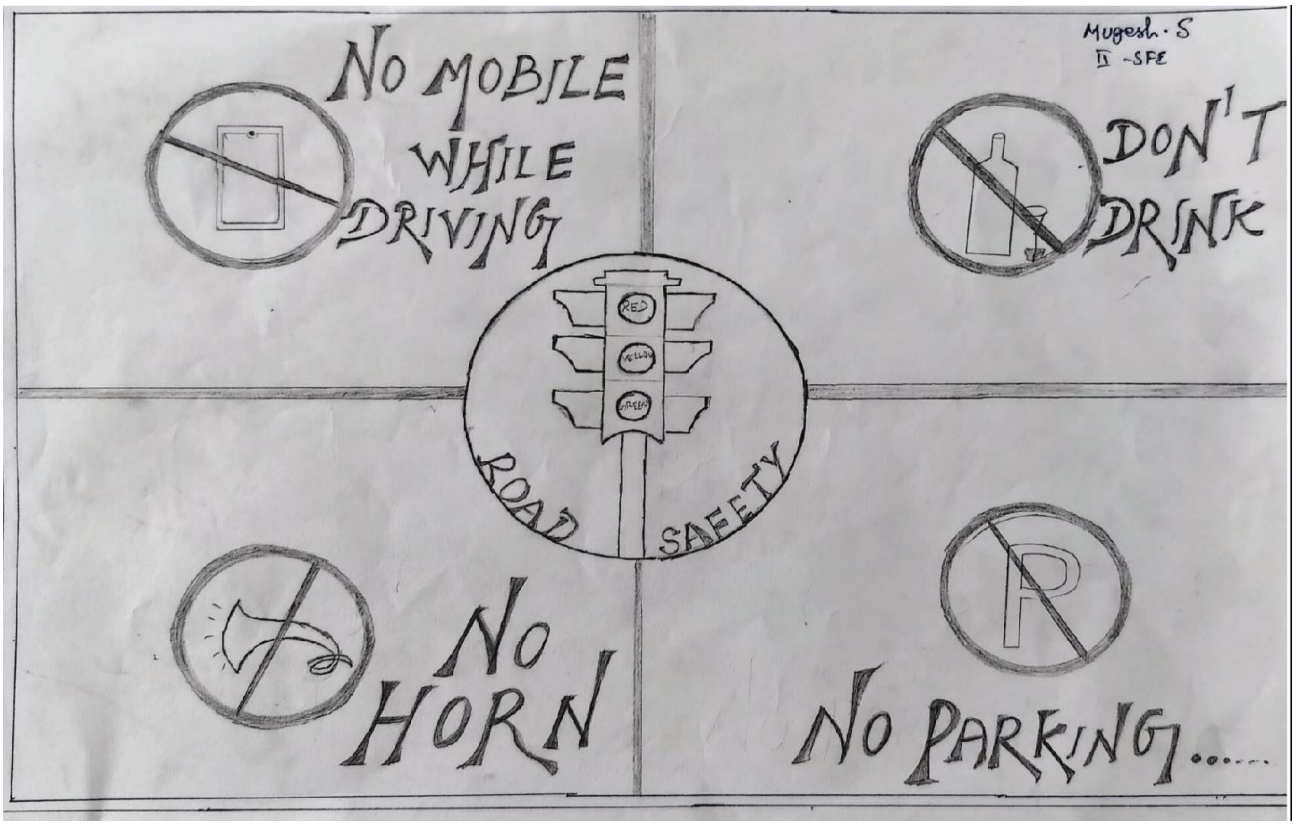
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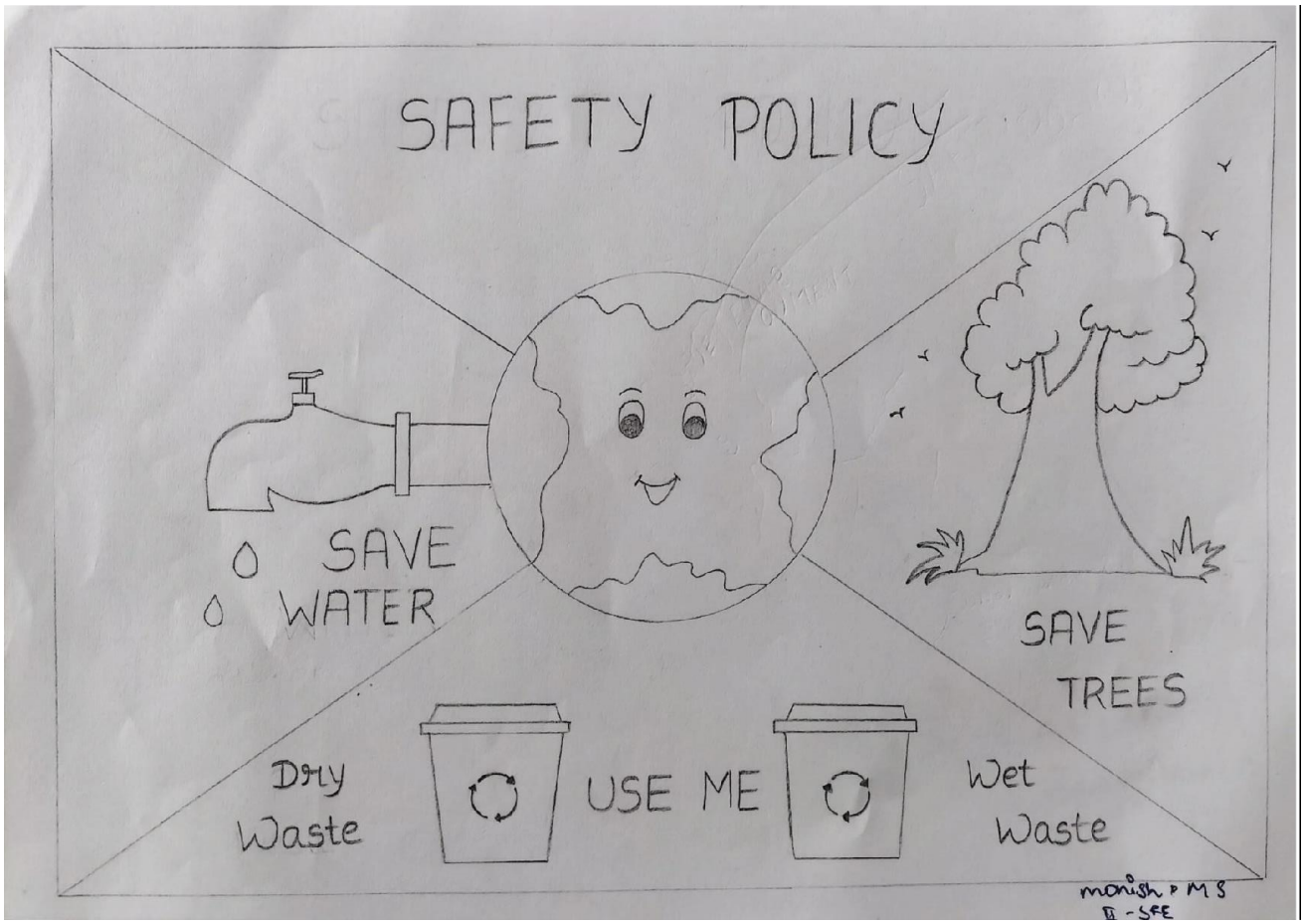
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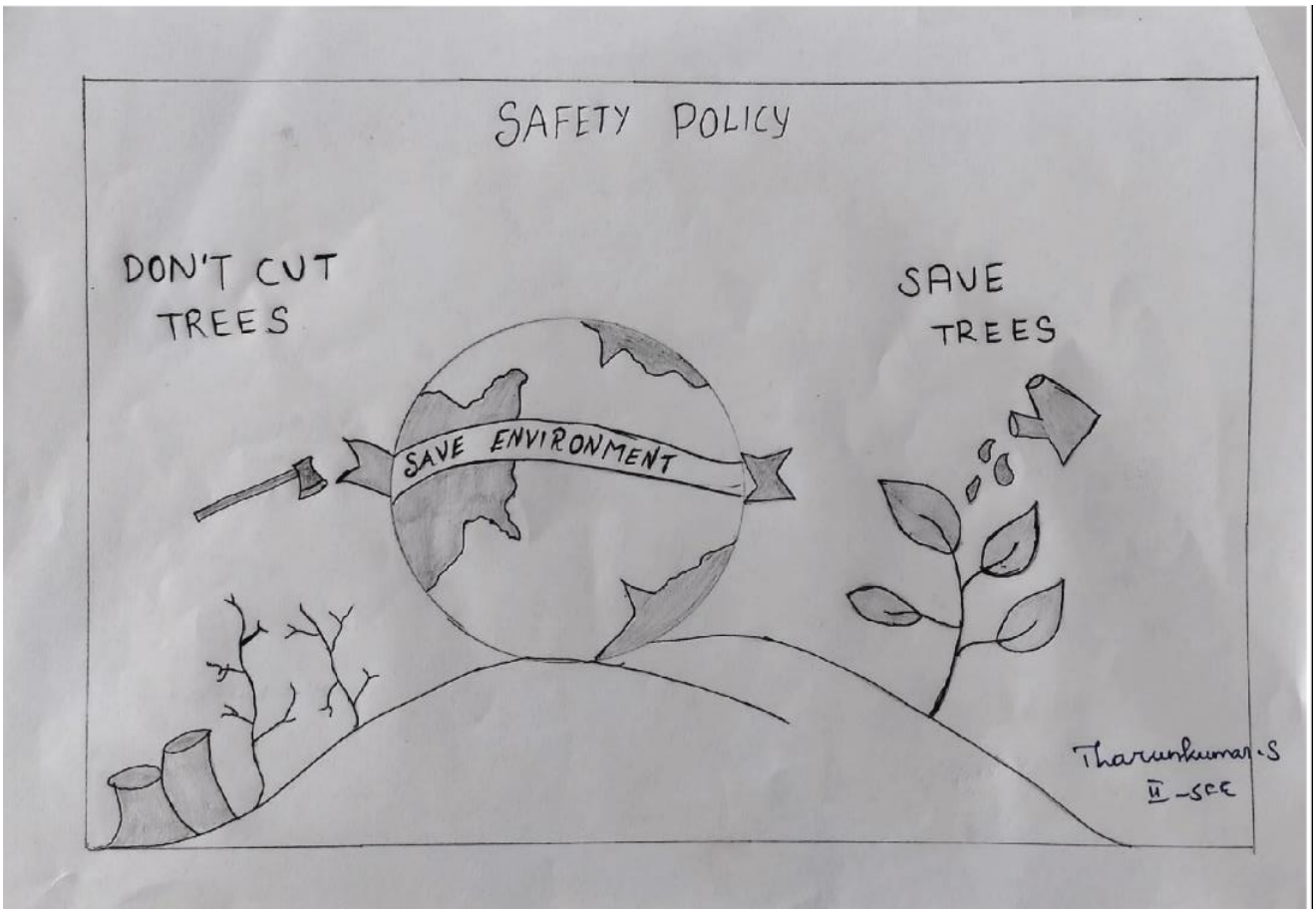
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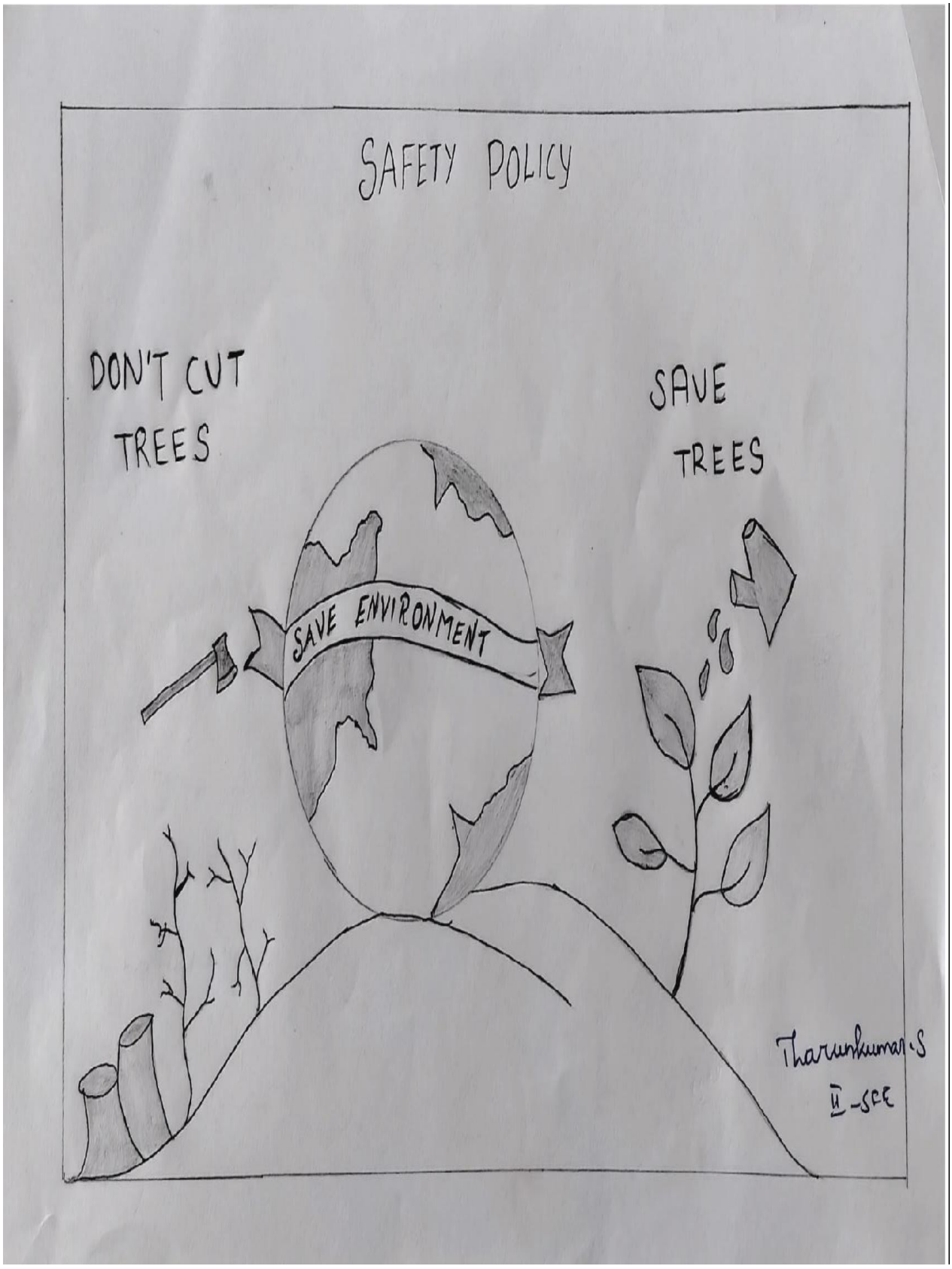
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