



SAFETY IN CHEMICAL INDUSTRIES

Gouri Sankar Gouda

Master's Student

Industrial Safety Engineering

Prof. Dipti Acharjya

Guide

Gandhi Institute for Technology (GIFT), Autonomous, Bhubaneswar

DECLARATION: I AS AN AUTHOR OF THIS PAPER /ARTICLE, HERE BY DECLARE THAT THE PAPER SUBMITTED BY ME FOR PUBLICATION IN THE JOURNAL IS COMPLETELY MY OWN GENUINE PAPER. IF ANY ISSUE REGARDING COPYRIGHT/PATENT/OTHER REAL AUTHOR ARISES, THE PUBLISHER WILL NOT BE LEGALLY RESPONSIBLE. IF ANY OF SUCH MATTERS OCCUR PUBLISHER MAY REMOVE MY CONTENT FROM THE JOURNAL WEBSITE. FOR THE REASON OF CONTENT AMENDMENT /OR ANY TECHNICAL ISSUE WITH NO VISIBILITY ON WEBSITE /UPDATES, I HAVE RESUBMITTED THIS PAPER FOR THE PUBLICATION.FOR ANY PUBLICATION MATTERS OR ANY INFORMATION INTENTIONALLY HIDDEN BY ME OR OTHERWISE, I SHALL BE LEGALLY RESPONSIBLE. (COMPLETE DECLARATION OF THE AUTHOR AT THE LAST PAGE OF THIS PAPER/ARTICLE

ABSTRACT

This study examines the kind of chemicals which are normally employed in the execution of such mechanisms together with the safety measures put in place, reviewing the nature and efficiency of personal protective devices (PPE) as well as engineer controls towards reducing exposure to chemical variants. The study based only on secondary data of government regulations, Environmental Impact Assessment (EIA) reports, Occupational Safety and Health Administration (OSHA) regulations and the case study by industry, finds that the chemical storage and documentation requirement by government regulations is completed with high rates but the training of workers, spill clean-up and Personal protective equipment (PPE) use leave much to be desired. It is worth noting that the poor adherence to PPE is directly pegged to a rise in exposure cases. The paper ends with several recommendations which any company can implement to enhance chemical safety practice such as compulsory safety training, frequent auditing, better containment procedures and enforcement of better PPE. Such discoveries make it imperative to have sensible and sustained enhancements of safety application in order to create a healthier and safer working environment in chemically-intensive construction works.

Keywords *Chemical Safety, Infrastructure Road Projects, Personal Protective Equipment (PPE), Safety Protocols, Construction Safety, Environmental Risk Management*



1. INTRODUCTION

Chemical industry is a pillar of modern industrialization and by so doing has encouraged innovations, enabled many down-streams and boosted the national economies, as well as increased technological growth. Chemicals are an essential component of the operation of many different industries, including the production of vital fertilizers and pharmaceuticals, petrochemicals as well as building materials. Nevertheless, the chemical business is all by default a risky venture because of the nature of work and because of the dangerous substances it deals with. A daily workflow has a great chance to involve the usage of flammable, explosive, toxic, corrosive, and reactive substances which many of them work on extreme pressure and temperature values.

Chemical processing poses complex risks that could be disastrous. These are accidental discharge of hazardous gases, fires, explosions, occupational long term health problems and environmental pollution. The consequences of such incidents may be devastating and they may include human life loss, property damages, legal implications, and reputational damages and even permanent ecological effects. Consequently, the mission was not to create chemical industries safety-enforceability by laws and regulations but to make it a strategic requirement in order to guarantee sustainability, social responsibility and continuity in the manner that the industries operate.

In this study, the authors of the paper are interested in investigating the chemical safety under the conditions of the infrastructure road sector where the limited number of substances are in common usage: ammonia, epoxy resins, hydrochloric acid, sulfuric acid, etc. Being of great necessity in regard to project efficiency and durability, these chemicals present a multifaceted layer of occupational and environmental risks unless controlled by the addition of preventive measures.

The paper aims at analysing the forms of chemical substances which are widely used, evaluates the successfulness of the availability of current safety requirement and personal protective equipment (PPE) and catches weak points of hazards control system. This paper will analyse any available secondary sources of information like Environmental Impact Assessment (EIA) reports, safety audits, industry guidelines, and OSHA regulations using them as a basis to come up with some recommendations in relation to how chemical safety can be enhanced to reduce



the amount of risk exposure experienced by the concerned parties. The intended outcome will improve resilience of the safety systems in the projects of infrastructural projects to guarantee the safeguarding of the workers, property and the environment under the organized and proactive management plan of the chemicals.

1.1. Importance of Safety in Chemical Industries

Daily activities in the chemical industries are associated with intricate nature of machines, storage facilities, production of heat and interaction with man thus increasing the potential of accidents. Thus, safety of personnel, equipment's and that of the surrounding environment is not only mandatory as per the law; it is strategic too. An effective Health, Safety and Environment (HSE) plan is extremely vital at the design level of any chemical plant.

The primary objectives of chemical safety include:

- Protection of human life and health
- Prevention of environmental hazards
- Preservation of plant assets
- Compliance with legal standards

These goals are supported through structured safety management systems, periodic audits, safety leadership, emergency preparedness, and continuous performance reviews.

1.2. Key Hazards in Chemical Plants

Chemical and hydrocarbon processing industries made on a large scale are exposed to various types of dangers. These are mechanical injuries, electric or electrocution, the exposure of toxic chemicals, fire or explosions of flammable material. Risks depend on the type of plant, and normally cover both physical and chemical risks.

As an example (see table below), an example of exposure limits and risk categories of some major chemicals found in ammonia plants is presented:

Table 1: Occupational Exposure Limits for Key Chemicals in Ammonia Plants

Chemicals	PEL (mg/m ³)	TWA (mg/m ³)	STEL (mg/m ³)
Sodium Hydroxide	2	2 (Ceiling)	250
Diethanolamine	-	-	15
Sulphuric Acid	1	1	80

Note: PEL – Permissible Exposure Limit; TWA – Time-Weighted Average; STEL – Short-Term Exposure Limit

These chemicals have grave health implications like causing severe burns, respiratory dysfunction, eye irritation and chronic disease in case there is prolonged exposure or when this exposure is above safe limits. Integrated handling and storage are further made difficult due to high-pressure operation and extreme temperatures.

1.3. Organizational Safety Structure and Responsibilities

Effective application of safety in the chemical industries is based on formalized system of accountabilities and procedures. This includes:

- Safety Policy and SMART Objectives: Stating the promise of zero consequences.
- Safety Department and Officer: There must be an entire department and officer devoted to the implementation of safety and in monitoring.
- Hazard Identification and Risk Assessment (HIRA): To plan preventively.
- Emergency preparedness & Response planning: To minimize impact in case of incidents.
- Training Employees and a Culture of Safety: in order to inculcate knowledge and preparedness among employees.

A cycle of continuous improvement action is anchored by regular safety auditing, stakeholder involvement, and performance measurement and the exchange of the best practices, which are targeted at decreasing the number of accidents and increasing the level of risk resilience.



1.4.Objectives of the Research

- Identify the chemicals used in the Infrastructure Road project and their potential safety risks.
- Evaluate the current safety protocols and procedures in place for handling and using these chemicals.
- Assess the effectiveness of personal protective equipment (PPE) and engineering controls in minimizing exposure to hazardous chemicals.
- Develop recommendations for improving chemical safety in the Infrastructure Road project.

2. REVIEW OF LITERATURE

Chen and Reniers (2020) explored the prevailing condition of the chemical industry in China which is commonly known to have an industrial infrastructure that also rapidly grows. Their research paper brought out the safety concerns that China was constantly experiencing (frequent industrial accidents, failure to regulate various industries, among other similar concerns) in spite of being ranked as one of the largest chemical manufacturers the world over. They underlined that most of these safety events could be avoided, and it was usually the case of inefficient planning, deficient safety systems, and emergency preparation. The researchers developed an approach to sustainable development with multiple pathways that imply the incorporation of safety technologies, increase of more stringent regulations, and a culture of safety in the organization. Their study provided great insights concerning the manner in which systematic failures both at the managerial and the operations levels led to high rates of accidents in chemical plants.

Chikhalikar and Jog (2018) assessed detailed account on the available approach to safety and hazard management within the chemicals industries. They looked at various qualitative and quantitative techniques available of risk analysis like HAZOP (Hazard and Operability Study), FMEA (Failure Modes and Effects Analysis), Bow-Tie Analysis, and Fault Tree Analysis (FTA). They found out that the high numbers of large-scale industries had adopted these tools formally, but in practice, the implementation of this safety practice was irregularly applied, particularly in small and medium industries. The review also indicated that the success rates of these methodologies greatly depended on degree of training, top management commitment,



and incorporating safety measures in the day-to-day activities. The researchers came to the conclusion that the most effectively designed safety framework may deteriorate with time even when they are continuously monitored, audited and are accompanied with feedback systems.

Bhusnure et al. (2018) dedicated specifically to the chemical safety in the pharmaceutical industry, which has a lot of features in common with the actual chemical manufacture as they involve exposure to hazardous substances, complexity of the processes, and necessity to maintain clean environments. In their study they found out various sources of risk including chemical spills, toxic fumes, flammable materials as well as inappropriate handling of high-potency compounds. The authors emphasized the necessity of Good Manufacturing Practice (GMP) application, use of highly molecular engineering controls, i.e. fume hoods and containment systems and Personal Protective Equipment (PPE) with emphasis. They also suggested that training on safety aspects be done routinely and risk-based methods must be adopted to avert occupational risks and environmental pollution. The research described the role played by industry-specific criteria, e.g. the chemical used and batch/continuous processing, in the selection of the safety measures adopted.

Murphy (2017) provided the overall picture that safety should be embedded in the life cycle of the chemical plants during design and construction stages and operation modes and decommissioning of chemical plants. He pointed to the importance of inherently safer design principles, which aim at preventing or minimizing the risk in place of simply controlling risks and thus treating hazards. His publication also illuminated the use of hazard analysis methods; Layer of Protection Analysis (LOPA) and Quantitative Risk Assessment (QRA) in the management of high-consequence events. In industrial accidents, Murphy found out that human factors, fatigue, lack of training, poor communication among them, were major contributors to the accidents, thus should be incorporated into the safety planning. Instead of the culture of compliance, he encouraged the creation of safety cultures in organizations, at which safety is a mutual responsibility issue, not a compliance one.

Stoessel (2021) concentrated on the thermal safety of chemical procedures and introduced the issues of runaway reactions, exothermic reactions and thermal decomposition. His book was an in-depth guide to determining thermal risks with the help of such tools as calorimetry, reaction hazard screening, and simulation-based modelling. Stoessel highlighted that the negligence thermal behaviours in scale-ups may cause uncontrollable reactions, combustions



or drastic side effects on the environment. He also explained how thermal safety audit and optimization of process design can help to reduce such risks. His contribution highlighted the necessity of engineers and safety experts to perform beyond the normal safety inspections and embrace the predictive and data-based methods of integrity of processes.

3. RESEARCH METHODOLOGY

This research project uses qualitative and descriptive research design. The objective will be to review and analyse the safety practice in Infrastructure Road projects in regard to chemical usage especially on risk identification, safety procedures, protection measures and safety improvement tactics.

3.1. Research Design

This research is descriptive research, which targets at methodical documentation and assessment of current safety standards and practices in relation to chemicals in the field of infrastructure. It also applies an analytical method of evaluating the performance of the safety measures and safety equipment installed.

3.2. Data Collection Method

This research relies entirely on obtained from credible sources such as government reports, safety guidelines by OSHA, technical papers, EIA reports, and academic publications. These sources provide insights into commonly used chemicals, associated risks, existing safety measures, and industry best practices in infrastructure-related chemical usage.

3.3. Data Analysis Method

The collected data is subjected to qualitative content analysis to extract relevant information and insights. Comparative assessment techniques are used to:

- Identify common hazardous chemicals and categorize them based on toxicity and risk level
- Evaluate safety protocols and PPE measures documented in case studies and reports
- Benchmark current practices against national and international safety standards
- Assess gaps in safety implementation

Where applicable, tabulated summaries and thematic groupings are used to present data in a concise and structured format.

4. DATA ANALYSIS AND RESULTS

This section presents a comprehensive examination of information concerning the field of chemo safety within the road-building infrastructure domain. The analysis is organized in such a way that it satisfies the identified research goals as it is constructed with the help of the tabulation of data and graphical presentation. All the data is compiled based on governmental regulations, the industry reports, EIA documents, the guidelines of OSHA and CPCB, and the published academic sources.

4.1. Identification of Chemicals Used and Associated Risks

Infrastructure road projects frequently utilize a variety of chemicals for processes such as soil stabilization, asphalt modification, waterproofing, curing, and structural reinforcement.

Table 2: Commonly Used Chemicals in Road Infrastructure Projects and Their Hazards

Chemical Name	Usage in Construction	Hazard Classification	Health Impact
Bitumen	Asphalt binding and waterproofing	Flammable, Skin Irritant	Dermatitis, Respiratory issues
Cement Additives	Setting time control	Corrosive	Skin burns, Eye irritation
Epoxy Resins	Crack sealing and repair	Irritant, Sensitizer	Asthma, Skin allergy
Hydrochloric Acid	Surface cleaning	Corrosive, Reactive	Burns, Eye and lung damage

Diesel & Solvents	Equipment cleaning and operation	Flammable, Toxic fumes	Headache, Nausea, CNS depression
-------------------	----------------------------------	------------------------	----------------------------------

Table 2 highlights to the road infrastructure projects that use hazardous chemicals, including: bitumen and cement additives, epoxy resins, hydrochloric acid and solvents. These are some of the risks attributed to these chemicals such as being flammable; causing corrosion, being toxic, and irritating to the skin or respiratory system. Their existence shows the importance of proper safety measures and precautions that should be followed in order to guarantee the health and safety of workers.

4.2. Evaluation of Existing Safety Protocols

Analysis of both the Environmental Impact Assessment (EIA) report and safety audit conducted on the industry shows the extent of the safety protocols implementation in infrastructural projects of roads.

Table 3: Safety Protocol Implementation in Road Projects

Parameter	Project A	Project B	Project C	Industry Average (%)
Chemical storage compliance (safe labelling)	85%	90%	75%	83.3%
Availability of MSDS (Material Safety Data Sheets)	95%	88%	92%	91.6%
Use of containment systems (spill control)	70%	65%	60%	65%
On-site chemical training for workers	50%	40%	35%	41.6%

Table 3 presents the status of major safety measures being adopted in three roads infrastructure projects. In storage of chemicals, and availability of MSDS, high compliance is observed, of

83.3 percent and 91.6 percent respectively, so labelling and documentation procedures appear to be well-kept. But the levels indicated in 65 (spill containment), and worse still, 41.6 (chemical training workers, on-site) are low, thus raising serious concerns about practical safety readiness. This implies that they have administrative controls but practical training and containment infrastructure require massive boosting so that the entire establishment of construction sites are safe against chemicals.

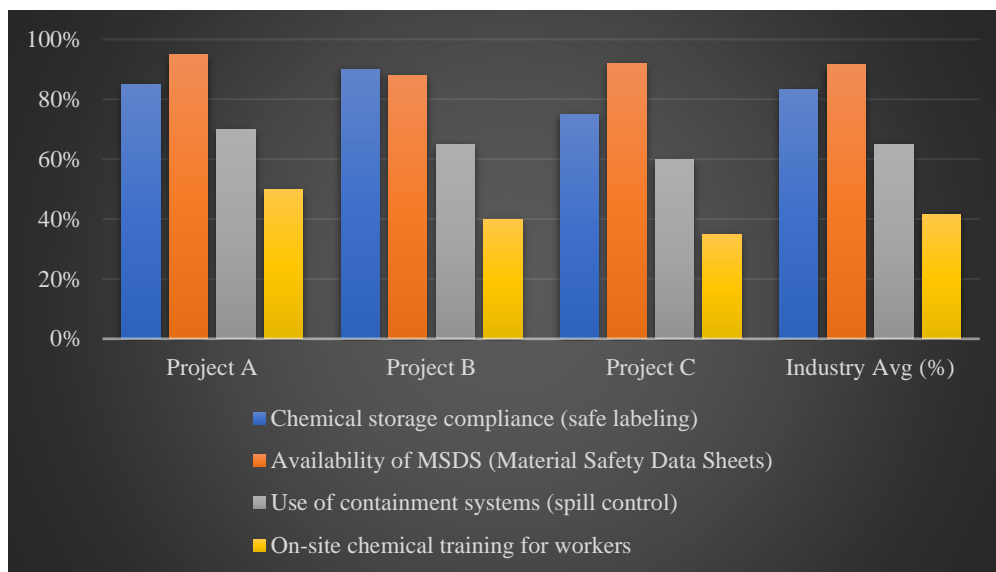


Figure 1: Graphical presentation of Safety Protocol Implementation in Road Projects

Figure 1 demonstrates high level of compliance over projects in chemical storage labelling (83.33%) and availability of MSDS (91.65%). Nonetheless, spill control systems have a moderate rate of implementation (65%) and poor results with regard to worker training with an industry average of only 41.6 percent, which is an urgent indication to enhance on-the-job-learning in chemical safety training.

4.3. Effectiveness of PPE and Engineering Controls

The use of Personal Protective Equipment (PPE) and engineering controls effectiveness has been measured by accessing OSHA reports, government labour audit, and case study in relation to the chemical-related accidents.

Table 4: PPE Usage Rates and Reported Exposure Incidents

Protective Equipment	Usage Compliance (%)	Reported Exposure Incidents (per 100 workers/year)
Safety Goggles	90%	2
Chemical-Resistant Gloves	80%	5
Respiratory Masks	60%	12
Chemical-Protective Clothing	50%	15

Table 4 illustrates an association between the compliance of usage of the various Personal Protective Equipment (PPE) and the reported exposure incidents per 100 workers per year. The data shows that the more the PPE is followed the lesser the occurrence of exposure. As an illustration, safety goggles, with a high degree of compliance at 90%, are associated with 2 incidences and chemical-protective clothes, the least complaint at 50% are associated with 15 incidences. Likewise, the usage of respiratory masks of just 60 percent results to 12 cases. A tendency vividly indicates that inefficient PPE can contribute considerably to health threats, which proves the necessity of a more rigid introduction and consciousness of PPE in the conditions of chemical handling.

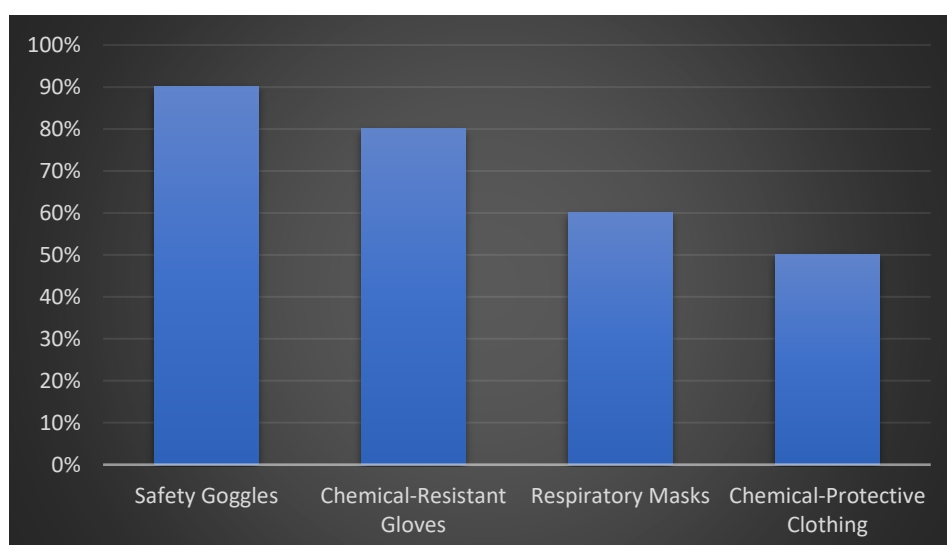


Figure 2: Graphical presentation of percentage of PPE Usage Compliance

The figure 2 demonstrates 90% adherence to safety goggles and 80% to gloves, however, much less respiratory masks (60%) and protective clothes (50%). This suggests the vulnerability of full-body and respiratory protective gear as there should be enhanced enforcement and training related to the use of PPE.

4.4.Recommendations for Safety Improvement

Based on the analysis of chemical hazards, protocol gaps, and PPE effectiveness, the study proposes several focused recommendations:

Table 5: Key Recommendations for Enhancing Chemical Safety

Area of Concern	Recommended Action	Expected Impact
Inadequate Training	Mandatory safety orientation before site deployment	Increased awareness and safety behaviour
Spill Control Measures	Installation of secondary containment units	Reduced accidental leaks and contamination
Low PPE Compliance	Periodic monitoring and enforcement	Decreased exposure incidents
Incomplete Safety Audits	Third-party audit at 6-month intervals	Improved protocol implementation

Table 5 presents important guidelines to enhance the provision of chemical safety in any road infrastructural project. It appears to work with four main areas of concern, that is, insufficient training, spill control, poor compliance with PPE, and unfinished safety audits. In each case, some activities are suggested including safety orientation, installation of secondary containment, PPE frequent monitoring, and the use of third-party safety audits on a 2-year basis. All this should improve the safety of the workers as they become more aware of this and there should be fewer chemical leaks, fewer cases of exposures, and this will increase the implementation of the protocols. Taken together, recommendations are meant to facilitate a safer and more compliance- based working environment.

5. DISCUSSION

The analysis provides some important revelations about the chemical safety applied in infrastructure road works. The fact that commonly used chemicals include bitumen, epoxy resins, hydrochloric acid and so on indicates the use of substances that can have adverse health outcomes such as respiratory problems and skin diseases. This puts emphasis on the strong safety procedures.

Evidence of current safety practices indicates great compliance in the use of safety protocols such as storage of chemicals and availability of MSDS sheets yet the current statistical data of 41.6% and 65% respectively indicates a profound gap in training practices of the workers and spill containment provisions. Such lapses make safe management and possibility of exposure more doubtful.

The review of PPE use reveals that the higher the rates of non-compliance, the more the cases of exposure. Another example is a situation where compliance levels in clothing that provides chemical protection amount to 50 % only, and the rate of exposure stands at up to 15 per 100 employees per year. That is why the need to have milder enforcement and regular inspection concerning PPE usage is critical.

Lastly, the suggestions offered including obligatory training, enhanced spill controls, frequent auditing, and surveillance of PPE use correspond with these results and are set to decrease the safety risks successfully. Generally, it is noted that some general guidelines are in place but the study highlights the fact that there is need to improve on the implementation and the practical enforcements so that the chemical safety can be achieved during the infrastructural projects.

6. CONCLUSION

The study highlights important areas of concern on chemical safety of infrastructure road projects by showing that some of the most popular chemicals used that have serious implications on health include but are not limited to bitumen, epoxy resins, and hydrochloric acid. Although the current safety measures such as the availability of chemical storage and MSDS are satisfactorily being followed, significant deficiencies exist in terms of employee training, control of spills and usage of PPE effectively. The graphical presentation of the data strongly shows that the lower compliance with the protective measures is associated with more

cases of exposure, and it is necessary to improve safety approaches existing at the scene. The recommendations also included the obligatory trainings, improved containment systems, regular audits, and the increased enforcement of PPE in enabling the reduction of hazards and enhancement of overall safety management. Thus, safety measures should be applied more strictly and actively to make working environment in the project safer, with regards to chemical-related infrastructure projects.

REFERENCES

1. Bahr, N. J. (2018). *System safety engineering and risk assessment: a practical approach*. CRC press.
2. Baumann, M., Moody, T. S., Smyth, M., & Wharry, S. (2020). *A perspective on continuous flow chemistry in the pharmaceutical industry*. *Organic Process Research & Development*, 24(10), 1802-1813.
3. Bhusnure, O. G., Dongare, R. B., Gholve, S. B., & Giram, P. S. (2018). *Chemical hazards and safety management in pharmaceutical industry*. *Journal of Pharmacy Research*, 12(3), 357-369.
4. Brown, A. R., Whale, G., Jackson, M., Marshall, S., Hamer, M., Solga, A., ... & Maltby, L. (2016). *Toward the definition of specific protection goals for the environmental risk assessment of chemicals: A perspective on environmental regulation in Europe*. *Integrated environmental assessment and management*, 13(1), 17-37.
5. Chen, C., & Reniers, G. (2020). *Chemical industry in China: The current status, safety problems, and pathways for future sustainable development*. *Safety science*, 128, 104741.
6. Chikhalikar, A. S., & Jog, S. H. (2018). *A review of methodologies for safety and hazard management in chemical industries*. *ChemBioEng Reviews*, 5(6), 372-390.
7. Date, M. S., O'Brien, D., Botelho, D. J., Schultz, T. W., Liebler, D. C., Penning, T. M., & Salvito, D. T. (2020). *Clustering a chemical inventory for safety assessment of fragrance ingredients: identifying read-across analogs to address data gaps*. *Chemical research in toxicology*, 33(7), 1709-1718.
8. Gul, M., Ak, M. F., & Guneri, A. F. (2019). *Pythagorean fuzzy VIKOR-based approach for safety risk assessment in mine industry*. *Journal of Safety Research*, 69, 135-153.
9. Hall, S. (2017). *Rules of thumb for chemical engineers*. Butterworth-Heinemann.

10. Moktadir, M. A., Ali, S. M., Kusi-Sarpong, S., & Shaikh, M. A. A. (2018). *Assessing challenges for implementing Industry 4.0: Implications for process safety and environmental protection*. *Process safety and environmental protection*, 117, 730-741.
11. Murphy, J. F. (2017). *Safety considerations in the chemical process industries*. *Handbook of industrial chemistry and biotechnology*, 1805-1887.
12. Naidu, R., Biswas, B., Willett, I. R., Cribb, J., Singh, B. K., Nathanail, C. P., ... & Aitken, R. J. (2021). *Chemical pollution: A growing peril and potential catastrophic risk to humanity*. *Environment international*, 156, 106616.
13. Pearce, F., & Tombs, S. (2019). *Toxic capitalism: Corporate crime and the chemical industry*. Routledge.
14. Pohanish, R. P. (2019). *Sittig's handbook of toxic and hazardous chemicals and carcinogens*. William Andrew.
15. Rigas, F. (2024). *Hydrogen safety: production, transport, storage, use, and the environment*. CRC Press.
16. Sikorski, J. J., Haughton, J., & Kraft, M. (2017). *Blockchain technology in the chemical industry: Machine-to-machine electricity market*. *Applied energy*, 195, 234-246.
17. Sontakke, M., Okpanum, J., Yerimah, L. E., Rebmann, A., Ghosh, S., & Bequette, B. W. (2023). *Decision making for safety and risk in healthcare and process systems*. *Chemical Engineering Science*, 277, 118866.
18. Stoessel, F. (2021). *Thermal safety of chemical processes: risk assessment and process design*. John Wiley & Sons.
19. Towler, G., & Sinnott, R. (2021). *Chemical engineering design: principles, practice and economics of plant and process design*. Butterworth-Heinemann.
20. Villa, V., Paltrinieri, N., Khan, F., & Cozzani, V. (2016). *Towards dynamic risk analysis: A review of the risk assessment approach and its limitations in the chemical process industry*. *Safety science*, 89, 77-93.



Author's Declaration

I as an author of the above research paper/article, here by, declare that the content of this paper is prepared by me and if any person having copyright issue or patent or anything otherwise related to the content, I shall always be legally responsible for any issue. For the reason of invisibility of my research paper on the website /amendments /updates, I have resubmitted my paper for publication on the same date. If any data or information given by me is not correct, I shall always be legally responsible. With my whole responsibility legally and formally have intimated the publisher (Publisher) that my paper has been checked by my guide (if any) or expert to make it sure that paper is technically right and there is no unaccepted plagiarism and hentriconane is genuinely mine. If any issue arises related to Plagiarism/ Guide Name/ Educational Qualification /Designation /Address of my university/ college/institution/ Structure or Formatting/ Resubmission /Submission /Copyright /Patent /Submission for any higher degree or Job/Primary Data/Secondary Data Issues. I will be solely/entirely responsible for any legal issues. I have been informed that the most of the data from the website is invisible or shuffled or vanished from the database due to some technical fault or hacking and therefore the process of resubmission is there for the scholars/students who finds trouble in getting their paper on the website. At the time of resubmission of my paper I take all the legal and formal responsibilities, If I hide or do not submit the copy of my original documents (Andhra/Driving License/Any Identity Proof and Photo) in spite of demand from the publisher then my paper maybe rejected or removed from the website anytime and may not be consider for verification. I accept the fact that as the content of this paper and the resubmission legal responsibilities and reasons are only mine then the Publisher (Airo International Journal/Airo National Research Journal) is never responsible. I also declare that if publisher finds Any complication or error or anything hidden or implemented otherwise, my paper maybe removed from the website or the watermark of remark/actuality maybe mentioned on my paper. Even if anything is found illegal publisher may also take legal action against me.

Gouri Sankar Gouda
Prof. Dipti Acharjya
