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INDIAN JOURNAL OF LEGAL REVIEW [IJLR – IF SCORE – 7.58]

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A STUDY ON ENVIRONMENTAL HEALTH AND TOXIC CHEMICAL RISKS IN COMMERCIAL CONTRACT WITH REFERENCE TO CHENNAI

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ABSTRACT

The workers around the world are facing a global health crisis due to occupational exposure to toxic chemicals in contracts. **Introduction** many of these workers lose their life following such exposures, succumbing to fatal diseases, cancers and poisonings, or from fatal injuries following fires or explosions.The statement that handle chemicals following safety procedures and who perceived to have received an adequate training in the management of accidents and first aid The **aim** is to analyse the additional burden that workers and their families face from non-fatal injuries resulting in disability, debilitating chronic diseases, and other health sequela, that unfortunately in many cases remain invisible. All of these deaths, injuries and illnesses are entirely preventable.Moreover, with new chemicals introduced every year, mechanisms for regulating. The **sample** size is 208. The purpose of empirical research is to accurately portray the environment and toxic chemical risks. The convenient sampling method is used to collect samples. The **findings** represent a much needed analysis of recent trends and priorities when it comes to protecting the health and safety of workers from occupational chemical exposures.Rapid urbanization in Chennai has led to increased pollution levels, especially in industrial zones. **Conclusion** These hazards are amplified by other negative socioeconomic and health factors, including higher rates of chronic diseases, lack of access to healthy foods, substandard housing, and stress from racism, poverty, unemployment, and crime. The dispersion and concentration of pollutants in water and soil.

KEYWORDS:

Chemical industry, environment, hazardous, workers, health.

INTRODUCTION:

The workers continue to be disproportionately exposed to chemicals across almost all workplace sectors.Businesses are increasingly embedding environmental clauses in commercial contracts, emphasizing sustainability and eco-friendly practices.ESG compliance is becoming a prerequisite for partnerships, especially in international trade.Production of chemicals as well as the industries using them are expanding, which means a high potential for increased occupational exposure. The **aim** is to explore opportunities for integrating sustainable practices and environmental safeguards into commercial contracts to balance industrial growth and ecological protection. **Evolution** as environmental movement gained momentum with events like the first Earth incidents like the Bhopal gas tragedy 1984 highlighted the catastrophic impact of toxic chemicals on human health and the environment.Accelerated globalization and liberalization increased cross-border commercial activities, bringing environmental compliance to the forefront.Toxic chemical usage in industries such as textiles, tanneries, and manufacturing drew regulatory

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attention.The **governmentinitiatives,** along with the Tamil Nadu state government, has implemented several initiatives to address environmental health and toxic chemical risks, particularly in industrial and commercial settings.The Hazardous and Other Wastes Management and Transboundary Movement Rules, 2016.The Air Prevention and Control of Pollution Act 1981 and The Water Prevention and Control of Pollution Act, 1974.The factors influence environmental health and toxic chemical risks in commercial contracts, particularly in an urban-industrial setting like Chennai. These **factors can** be categorized into environmental, industrial, regulatory, economic, and social factors. Understanding these is crucial to assessing and mitigating risks effectively.Rapid urbanization in Chennai has led to increased pollution levels, especially in industrial zones.High population density exacerbates exposure to environmental hazards caused by toxic chemicals.Chennai's coastal location increases vulnerability to environmental hazards such as flooding, which can spread contaminated industrial waste into residential areas.Seasonal variations, like the monsoon, can affect the dispersion and concentration of pollutants in water and soil.High-risk industries in Chennai, such as tanneries, chemicals, textiles, and automobile manufacturing, use and generate hazardous materials.The absence of environmentally safe practices in some small-scale industries contributes to risks. **Current trends** related to Incorporation of ESG Environmental, Social, and Governance in Contracts. Protecting workers in hazardous conditions and Priority is given to workers in the most hazardous sectors and occupations, such as agriculture, construction, mining, or where working relationships or conditions create particular risks, traditional or emerging ones, or in the informal economy or new forms of economy.Work-related accidents and diseases take a particularly heavy toll in developing countries, where large numbers of workers are concentrated in the primary and extractive activities mentioned above. The **Comparison** towards Germany it is Governed by stringent EU-wide regulations like Waste Framework Directive.National laws like the German Chemicals Act ensure safe handling of toxic substances.Comprehensive real-time monitoring systems for air, water, and soil pollutants.Regular inspections and audits conducted by environmental agencies.Strong penalties and consistent enforcement ensure high compliance rates.Sectors like pharmaceuticals, chemicals, and automotive operate with advanced safety protocols and technologies.Strong emphasis on circular economy principles, recycling over 90% of hazardous waste.Advanced treatment facilities and strict adherence to disposal guidelines. Comprehensive safety measures and regular training for workers handling toxic substances.Strict occupational health standards enforced by regulatory agencies.

OBJECTIVES:

1. To find out the challenges faced by the working people in the chemical industry.
2. To analyse the safety measures in the chemical industry.
3. To explore the benefits that get it from the chemical process industry.
4. To examine the reasons for chemical problems in industry.

REVIEW OF LITERATURE:

(Tao Zeng 2023) The increasing demand for chemical products has driven the construction and development of chemical industrial areas, or so-called chemical industrial parks, but this has intrinsically raised the risk of major accidents.keyword co-occurrence analysis of 116 scientific articles was conducted to support the classification of research topics in this field, then an overview of those research topics was presented to investigate the evolution of safety research with respect to CIPs. The research method used here is empirical research. The sample size is 290. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc.

(Guohua Chen 2022) The chemical industry has played a vital role in international economic developments, driving large-scale increases in the processing of chemical materials and the transportation between chemical companies. The research method used here is empirical research. The sample size is 250. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Specifically, the way that safety assessments are conducted, as well as how safety management and safety technology in such areas are classified and investigated, followed by detailed descriptions of representative methods and their contribution.

(Yunfeng Yang 2021) Moreover, collaboration also makes it more convenient for the implementation of Industry 4.0 in the chemical industry.Unlike the traditional industrial areas, chemical industrial parks (CIPs) are geographically defined areas within which several independent chemical companies. The research method used here is empirical research. The sample size is 240. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc.

(Farzana Sathar 2021) In many low and middle income countries (LMIC), workers' and consumers' only access to risk and hazard information in relation to the chemicals they use or work with is on the chemical label and safety data sheet. The research method used here is empirical research. The sample size is 260. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Recall of chemical hazard information is vital in order for label warnings and precautionary information to promote effective safety behaviors.

(Mohamed Aqiel Dalvie 2020) It is crucial that hazard information for toxic substances be clearly presented and understandable in order to be effective in alerting users of potential hazards and how to safely use the product. The research method used here is empirical research. The sample size is 356. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Chemical hazard communication is commonly provided in the form of labels and safety data sheets.

(Hanna-Andrea 2019) which found that more than 50% of the participants reported media (television, newspapers, radio, internet, magazines, documentaries, and e-mail) and personal experience as sources of health and safety information while less than 25% reported other sources such as friends and family. The research method used here is empirical research. The sample size is 301. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. However, chemicals may have different properties with varying degrees of health and physical hazards.

(Rother 2018) It can be defined as the process of retrieving words or pictures from memory.The hazard information, such as the GHS information is crucial for warnings and precautionary information to be effectively understood and applied Failure to recall hazard information during a critical moment when the source of this information is not accessible. The research method used here is empirical research. The sample size is 500. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc.

(Ravi Naidu 2015) Since comprehension and recall are closely linked, the purpose of this literature review is to identify themes as well gaps within the current literature with respect to the comprehension and recall of hazard information. The research method used here is empirical research. The sample size is 463. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. We will explore the comprehension and recall of chemical hazard information among workers and consumers.

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(Julician cribb 2013) Anthropogenic chemical pollution has the potential to pose one of the largest environmental threats to humanity, but global understanding of the issue remains fragmented. The research method used here is empirical research. The sample size is 400. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. This article presents a comprehensive perspective of the threat of chemical pollution to humanity, emphasising male fertility, cognitive health and food security. There are serious gaps in our understanding of the scale of the threat and the risks posed by the dispersal.

(Frederick 2000) The benefits of synthetic chemicals to everyday life are undeniable but their deliberate and unintentional release into the wider environment is a direct consequence of economic development. Chemical pollutants have been released since the Industrial Revolution but their release and dispersal has accelerated markedly in the last half-century. The research method used here is empirical research. The sample size is 170. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Emissions of carbon dioxide (CO2), with their long-term effects on the climate, atmosphere.

(R.Willett 1998) An overview of global sources and pathways of chemical pollution and its potential impacts on the environment and human health. The research method used here is empirical research. The sample size is 108. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Six major pathways of chemical pollutants have been identified involving soil, air, water, wildlife, people and trade, as displayed.

(Landrigan 1995) To place this in perspective, the chemical-related annual death toll is significantly greater than that of World War II and today constitutes the greatest preventable form of mortality. The research method used here is empirical research. The sample size is

289. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Furthermore, it inflicts catastrophic losses on wildlife, notably insects and animals that depend on them, ecosystems and their services, such as pollination or clean water, on which humans depend for our own existence. This underlines the role of chemical pollution in potential.

(Diamanti 1992) A thorough and state-of-the-art literature and global database search was made to support the perspective developed here. We present a global picture of chemical pollutants from many sources affecting human wellbeing in general, and humanity's long-term survival prospects in particular. The research method used here is empirical research. The sample size is 178. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. This analysis is in addition to the effects of greenhouse gases and their effects on climate and humanity.

(Wangtell 1895) Their mixtures are creating new chemical environments with very uncertain toxicity. Chemical intensification is a feature of almost all major industries: in modern agriculture, for example, the intensive production of crops and livestock to feed much of the world now relies on the annual application of some 5 million tonnes of pesticides and 200 million tonnes of concentrated nitrogen, phosphorus and potassium (NPK) fertilisers. The research method used here is empirical research. The sample size is 309. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc.

(Patterson 1895) The Agency for Toxic Substances and Disease Registry (ATSDR) lists 275 priority chemicals as pollutants, based on their frequency, toxicity and potential for human exposure. The research method used here is empirical research. The sample size is 100. The

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statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. However, this is likely to be a significant underestimate given the difficulties in tracking novel or 'unknown' chemicals.

(Carson 1893) The world began to recognise it was facing severe problems due to the persistence of organic pesticides in the environment and the resulting cumulative exposure of wildlife and humans. The research method used here is empirical research. The sample size is 136. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Although some persistent organic pesticides have since been banned, humanity is still dealing with their legacy. Dichloro-diphenyl-trichloroethane.

(Kerr 1891) The lag between discovering a chemical's benefits and understanding its potential harms has resulted in a pattern of new chemical synthesis, licensing, production and use, followed by concerns over potential effects, bans and restrictions, followed by an urgent search for replacement chemicals – frequently with other negative effects. The research method used here is empirical research. The sample size is 222. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. This has led to new chemicals being released into the environment and food chain.

(Morrison 1890) Although some pollution control measures exist they are often not being adopted at the rate needed to avoid chronic and acute effects on human health now and in coming decades. The research method used here is empirical research. The sample size is 267. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. There is an urgent need for enhanced global awareness and scientific scrutiny of the overall scale of risk posed by chemical usage, dispersal and disposal. **(Sotirios 1890)** The industrialization of the agricultural sector has increased the chemical burden on natural ecosystems. Pesticides are agrochemicals used in agricultural lands, public health programs, and urban green areas in order to protect plants and humans from various diseases. The research method used here is empirical research. The sample size is 208. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. However, due to their known ability to cause a large number of negative health and environmental effects, their side effects can be an important environmental health risk factor. **(Chryshanthi 1880)** Pesticides are substances or mixtures of substances that are mainly used in agriculture or in public health protection programs in order to protect plants from pests, weeds or diseases, and humans from vector-borne diseases, such as malaria, dengue fever, and schistosomiasis. The research method used here is empirical research. The sample size is 200. The statistical tools are bar graphs, pie charts. The independent variable age, gender, educational qualification etc. Insecticides, fungicides, herbicides, rodenticides, and plant growth regulators.

METHODOLOGY:

The research was done by using primary and secondary data.The research method is empirical research. This purpose of **research type** is empirical research used to accurately portray the environment and toxic chemical risks. The **research method** is a convenient sampling method used to collect samples. The **sample size** is 208. The research was done by using primary and secondary data. The **statistical tool** used here is SPSS with bar graph. **Independent variables** like age, marital status, gender, income. **Dependent variables** like challenges faced by the working people,the dangerous chemical industry,the safety measures,problems faced in industry. Benefits that get it from the chemical process industry,the reasons for chemical problems in industry, the most dangerous chemicals that affect people.

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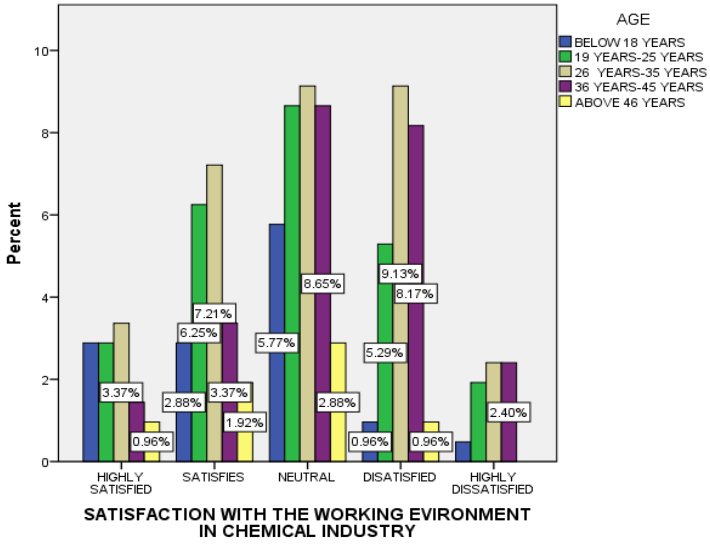
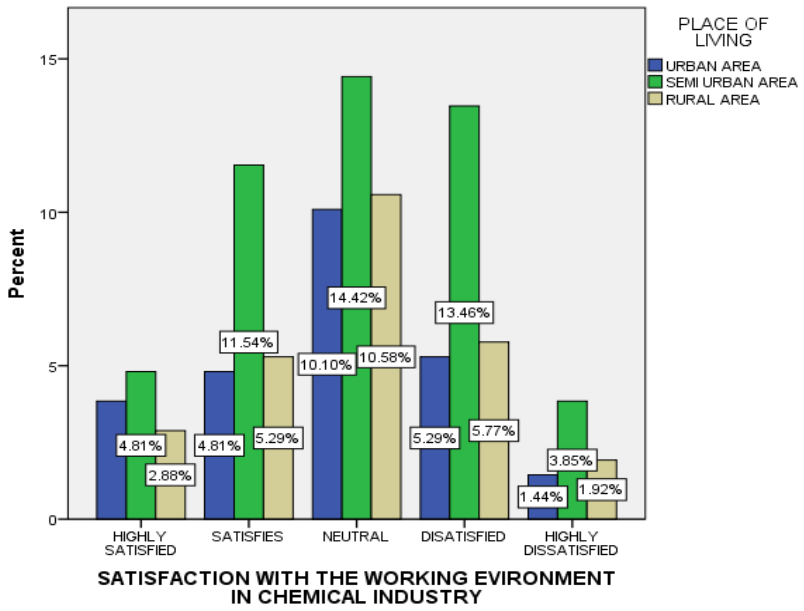
ANALYSIS:

FIGURE 1:



LEGEND: The figure 1 represents the age and the satisfaction towards environment of the respondent

FIGURE 2:



LEGEND: The figure 2 represents the place of living and the working environment in the chemical industry of the respondent.

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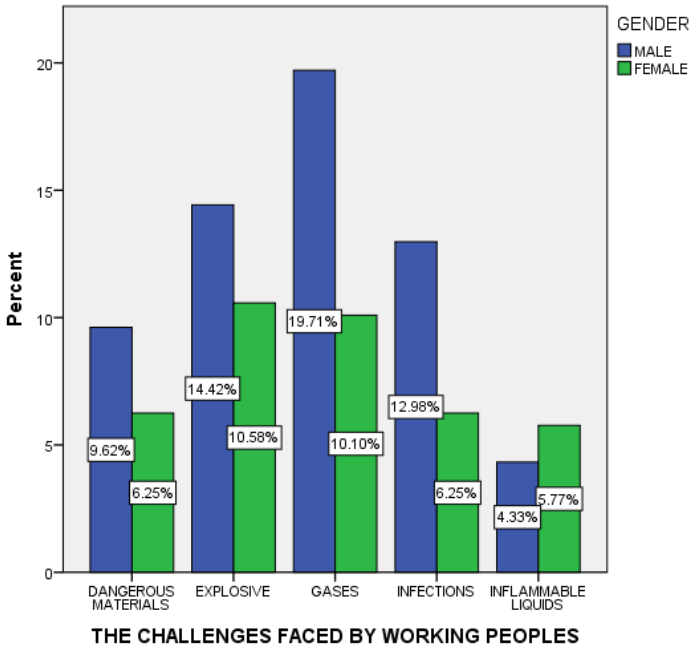
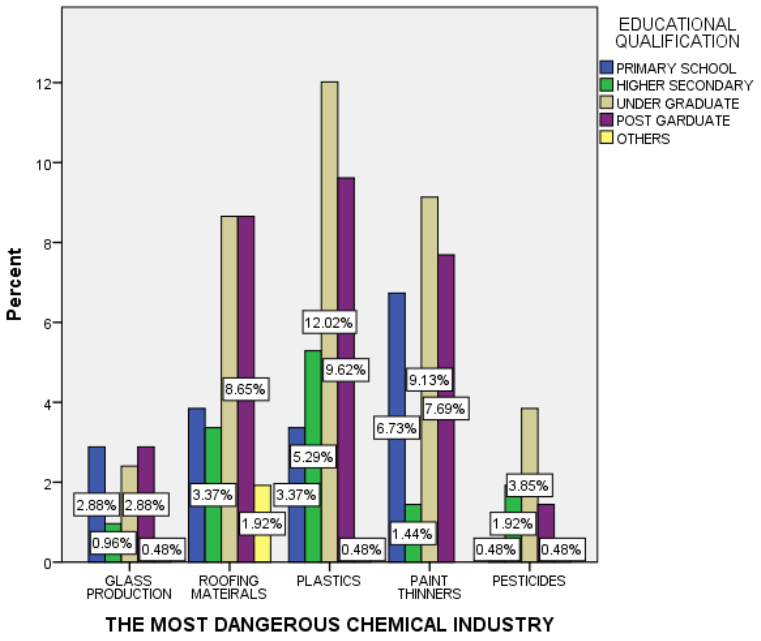
FIGURE 3:



LEGEND: The figure 3 represents the gender and the challenges faced by working people of the respondent.

FIGURE 4:



LEGEND: The figure 4 represents the educational qualification and the dangerous chemical industry of the respondent.

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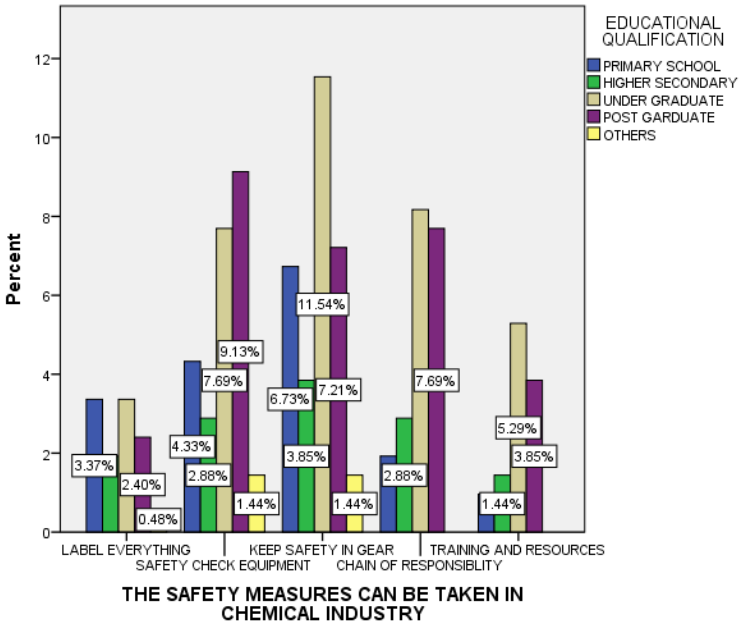
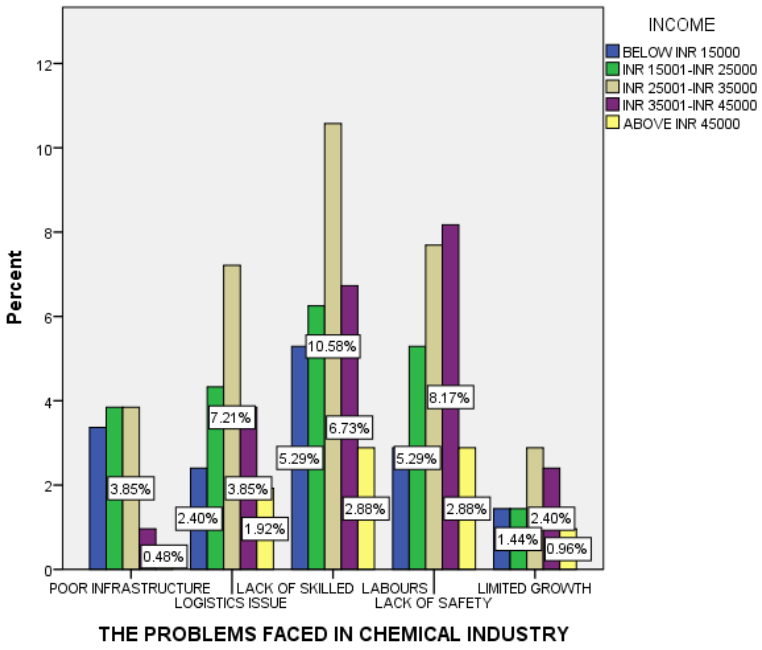
FIGURE 5:



LEGEND: The figure 5 represents the educational qualification and the safety measures in chemical industry of the respondent.

FIGURE 6:



LEGEND: The figure 6 represents the income and the problems faced in chemical industry of the respondent.

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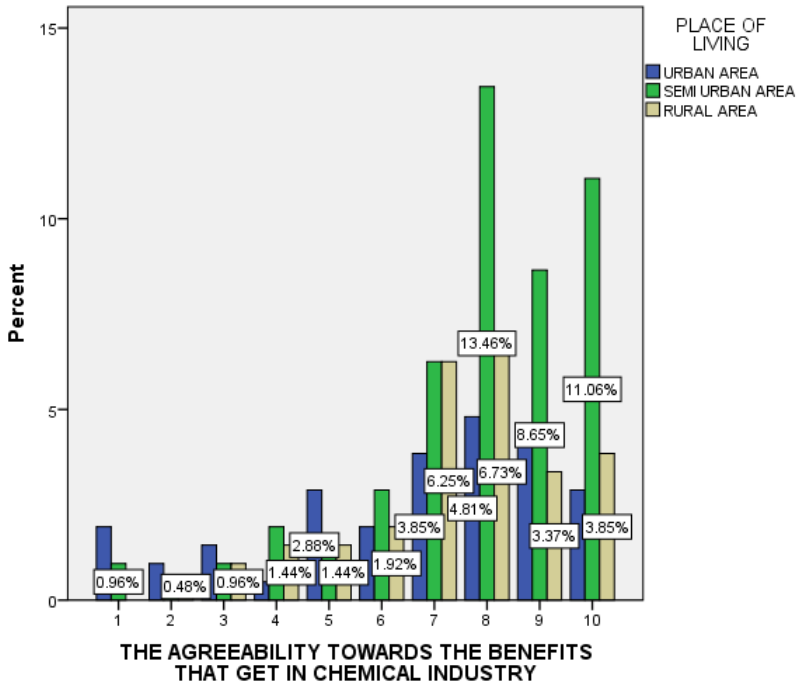
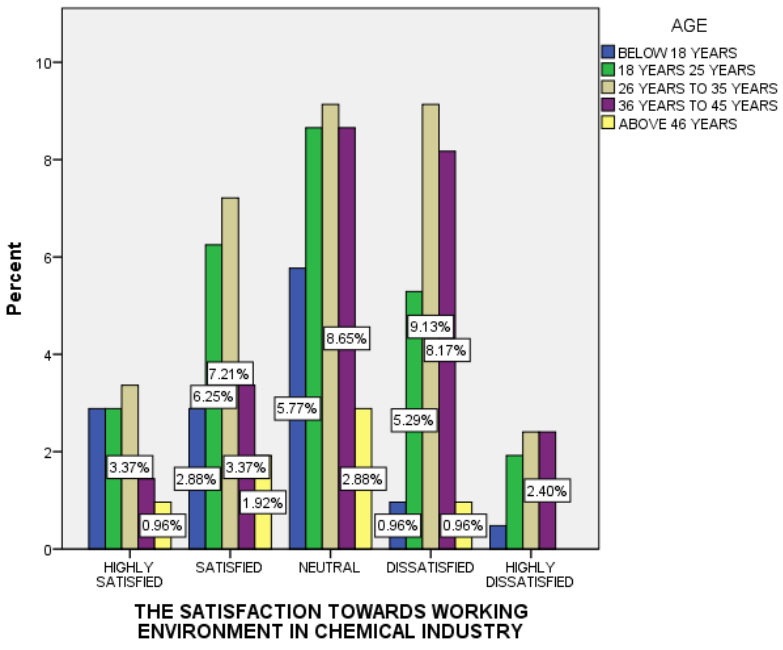
FIGURE 7:



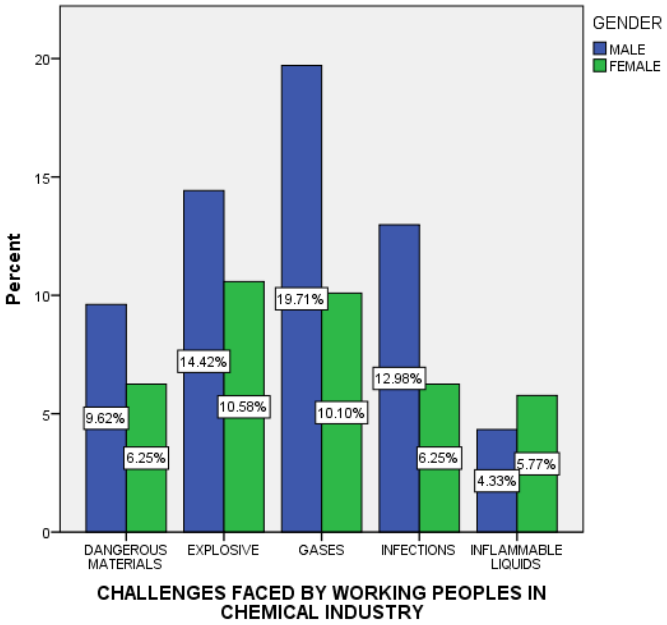
LEGEND: The figure 7 represents the place of living in the agreeability towards benefits that get in chemical industry of the respondent.

FIGURE 8:



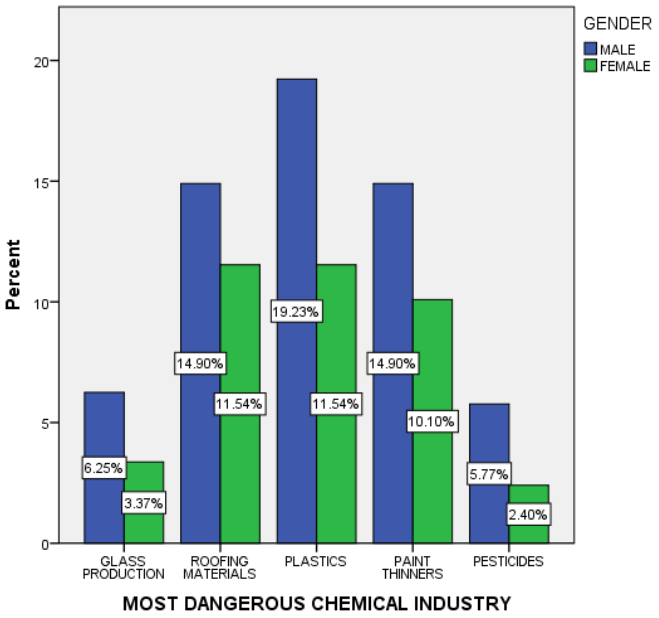
LEGEND: The figure 8 represents the age and satisfaction towards working environment in chemical industry of the respondent.

FIGURE 9:



LEGEND: The figure 9 represents the age and challenges faced by working peoples in chemical industry of the respondent.

FIGURE 10:



LEGEND: The figure 10 represents the gender and most dangerous in chemical industry of the respondent.

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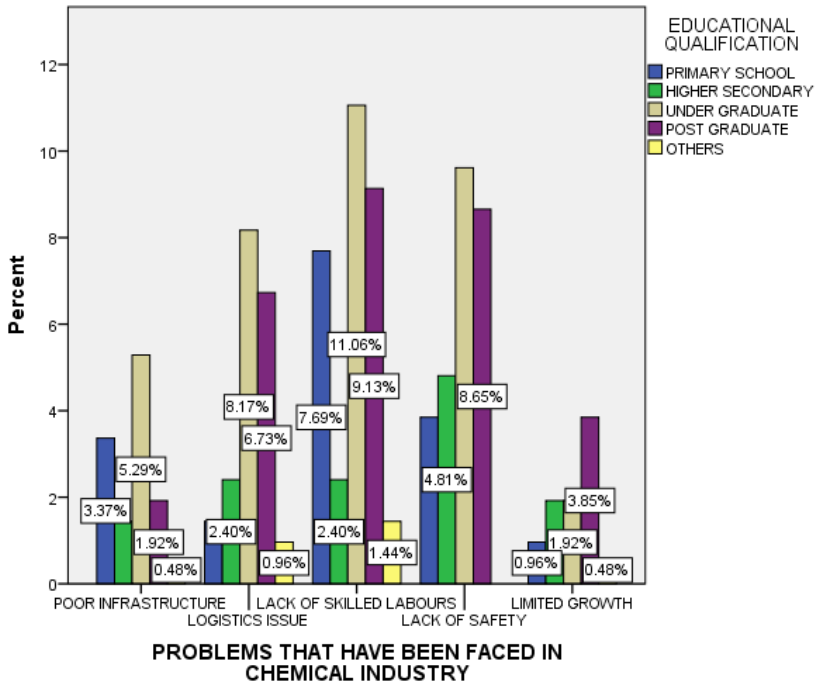
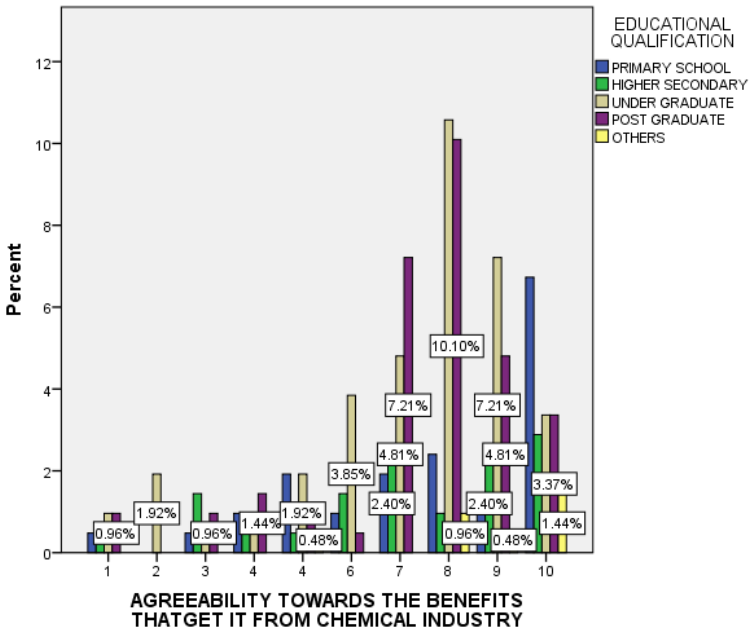
FIGURE 11:



LEGEND: The figure 11 represents the educational qualification and the problems in chemical industry of the respondent.

FIGURE 12:



LEGEND: The figure 12 represents the educational qualification and agree ability towards that the benefits that get it from chemical industry of the respondent.

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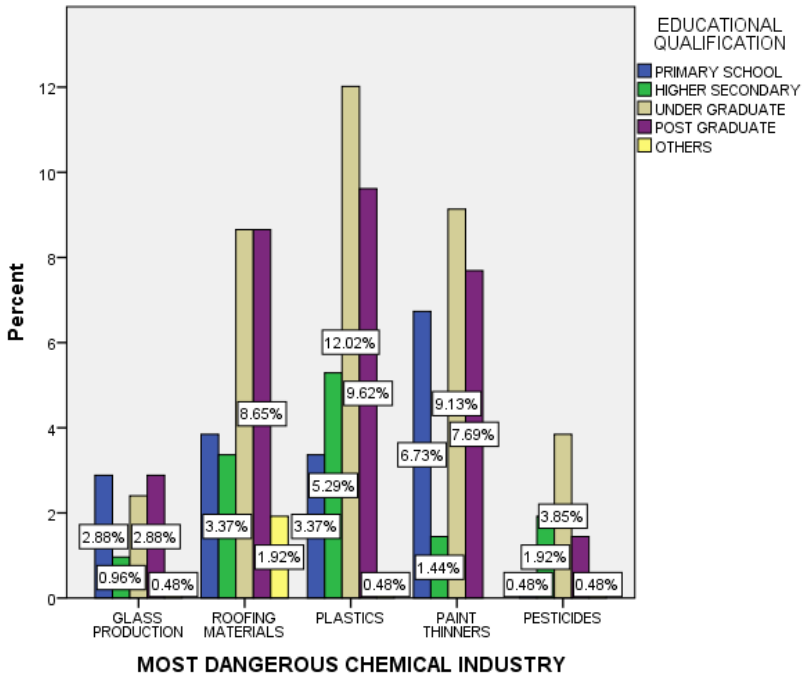
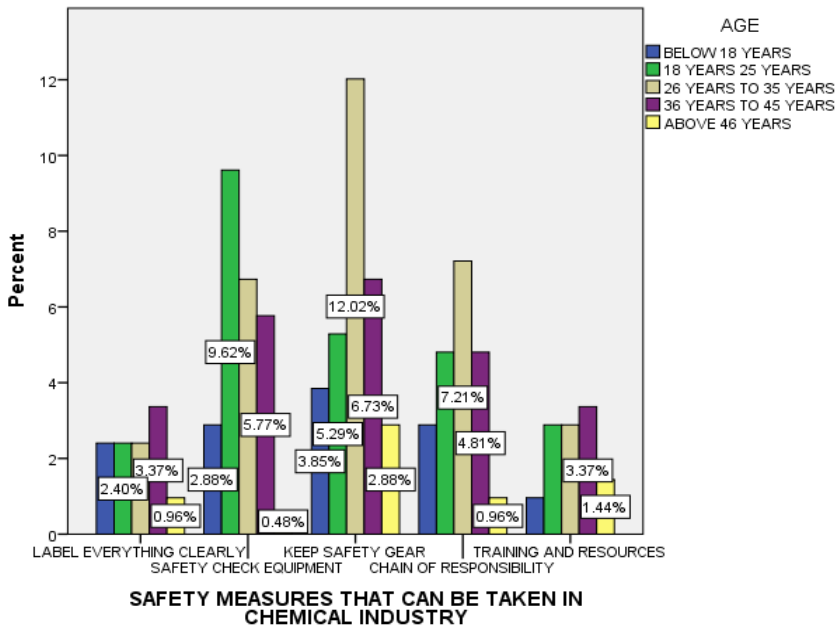
FIGURE 13:



LEGEND: The figure 13 represents the educational qualification and most dangerous in chemical industry of the respondent.

FIGURE 14:



LEGEND: The figure 14 represents the age and safety measures that can be taken in chemical industry of the respondent.

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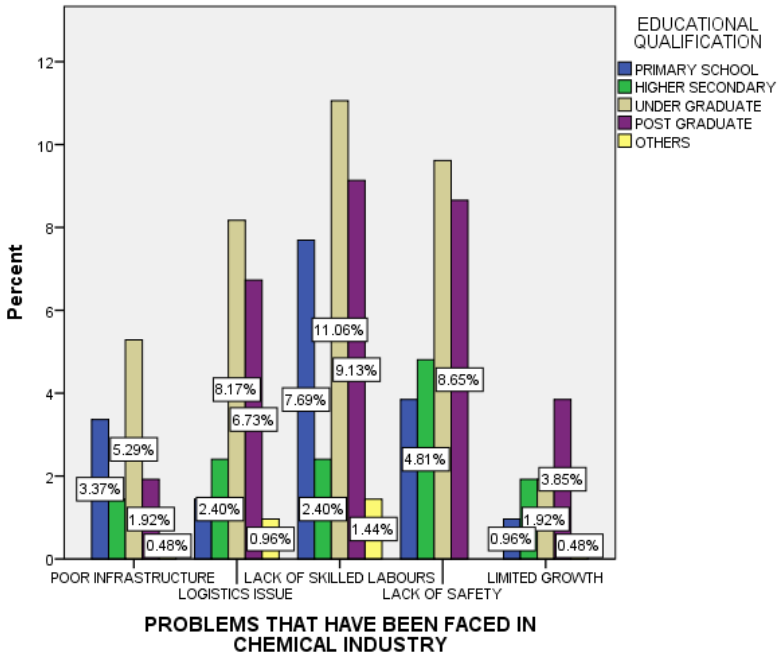
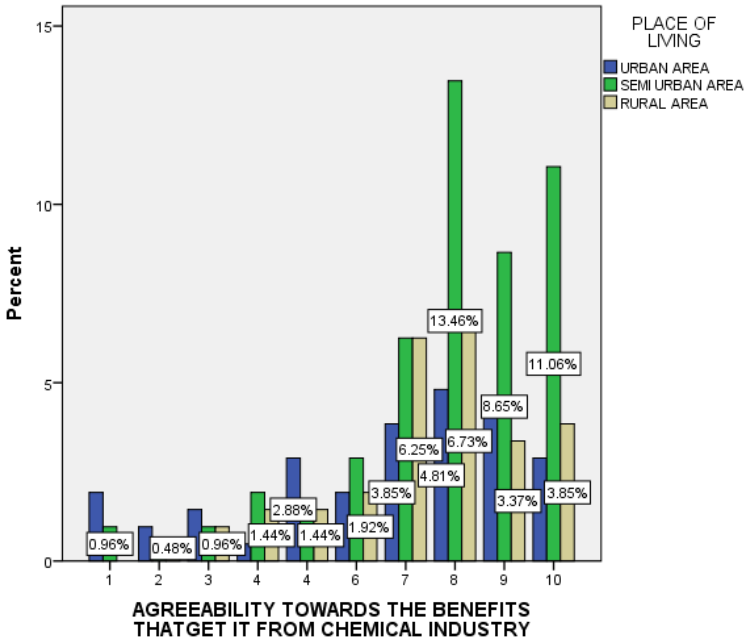
FIGURE 15:



LEGEND: The figure 15 represents the educational qualification and problems that have been faced in chemical industry of the respondent.

FIGURE 16:



LEGEND: The figure 16 represents the place of living and agree ability towards benefits that get it from in chemical industry of the respondents.

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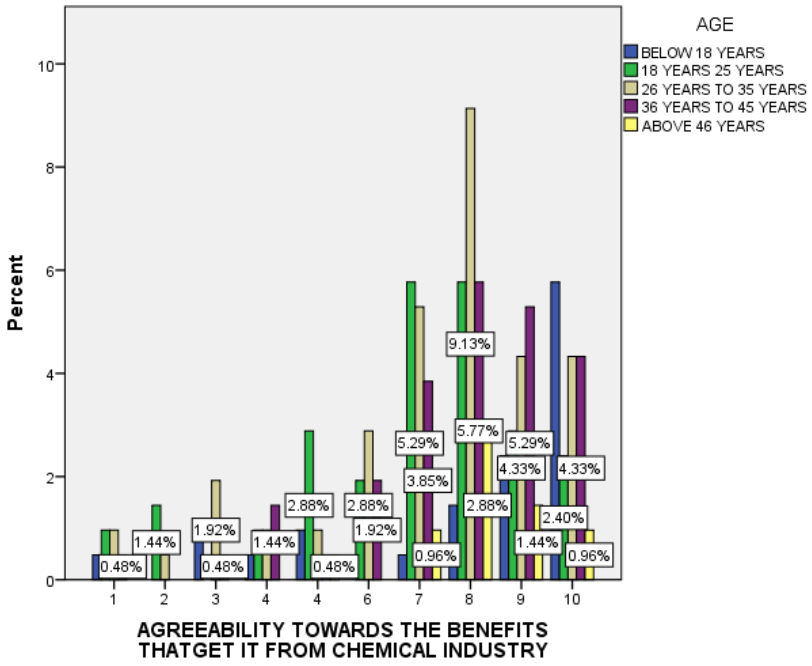
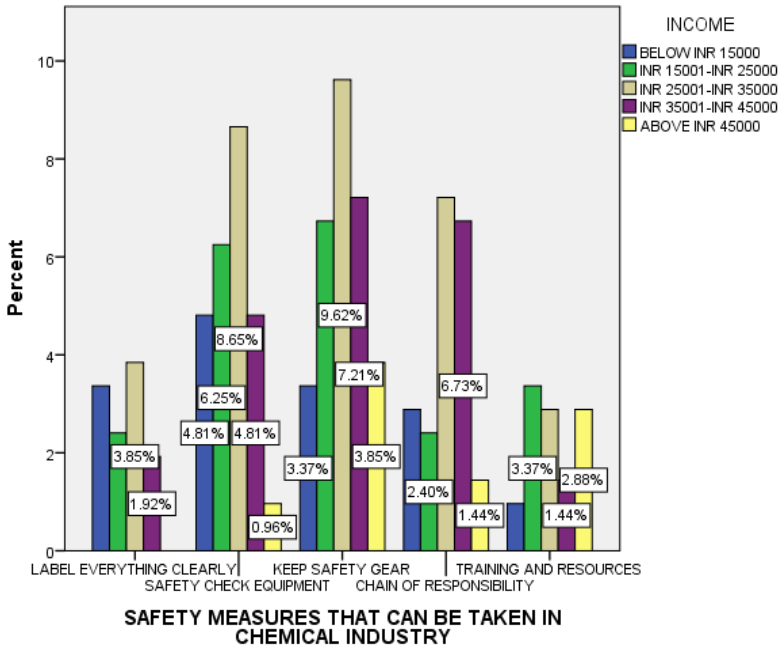
FIGURE 17:



LEGEND: The figure 17 represents the age and agree ability towards benefits that get it from in chemical industry of the respondent.

FIGURE 18:



LEGEND: The figure 18 represents the income and safety measures that can be taken in the chemical industry of the respondent.

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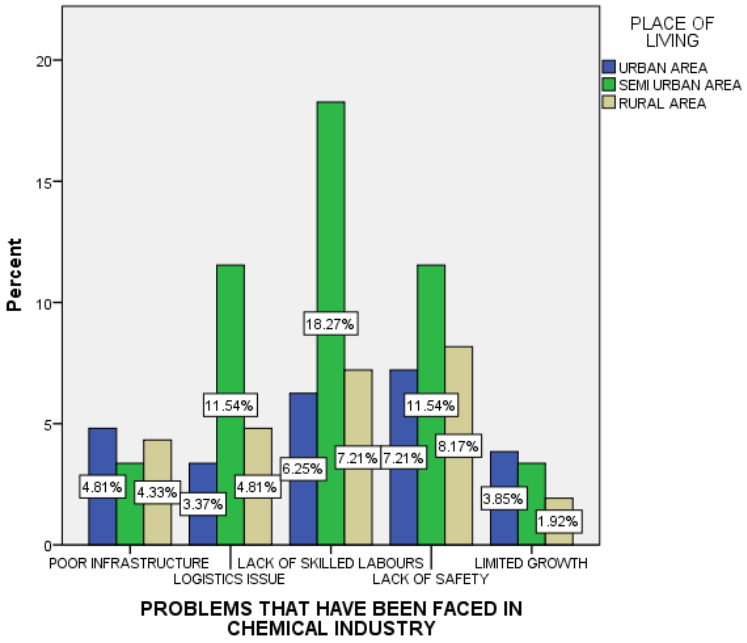
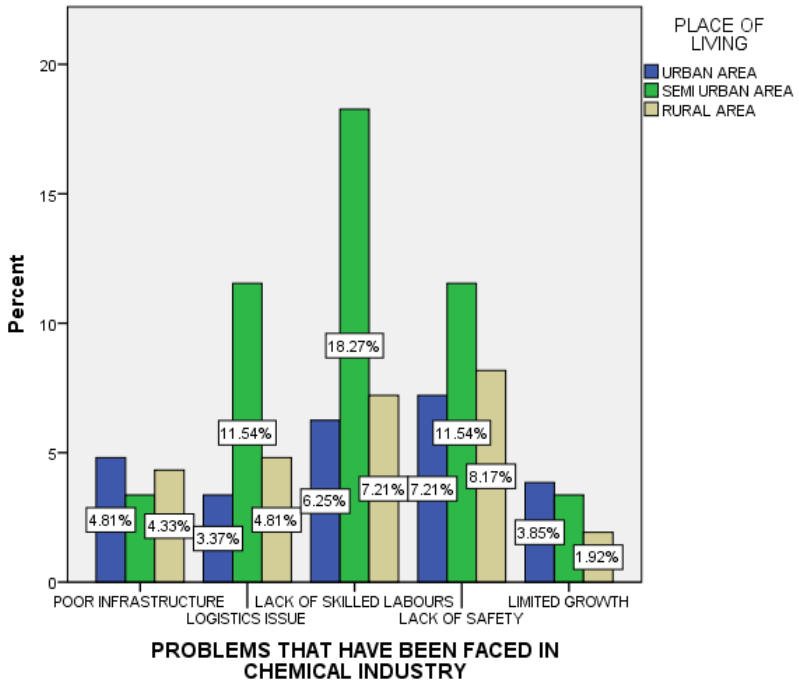
FIGURE 19:



LEGEND: The figure 19 represents the place of living and problems that have been faced from in the chemical industry of the respondent.

FIGURE 20:



LEGEND: The figure 20 represents the age and agreed ability towards benefits that get it from in the chemical industry of the respondent.

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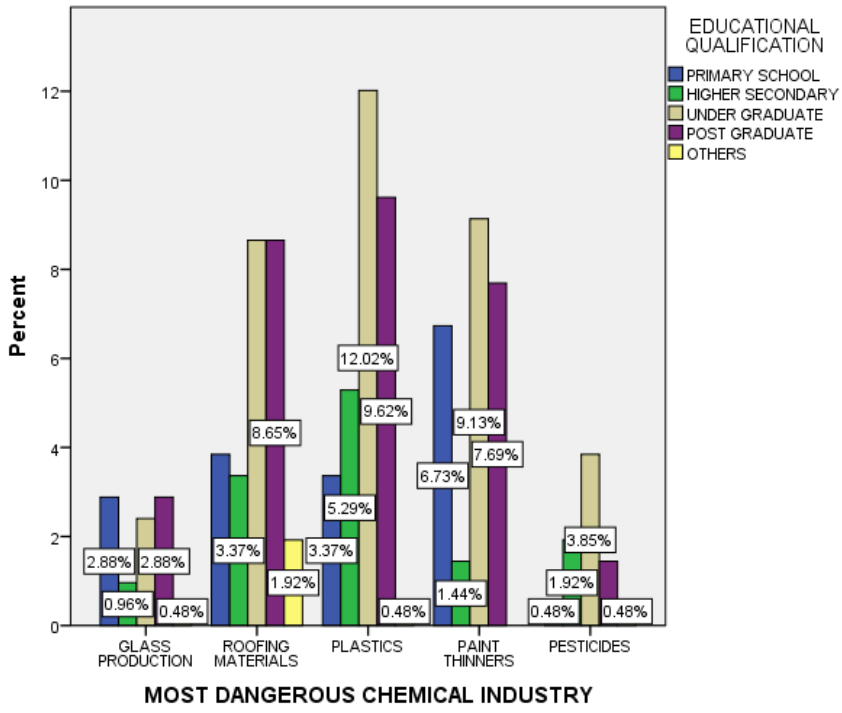
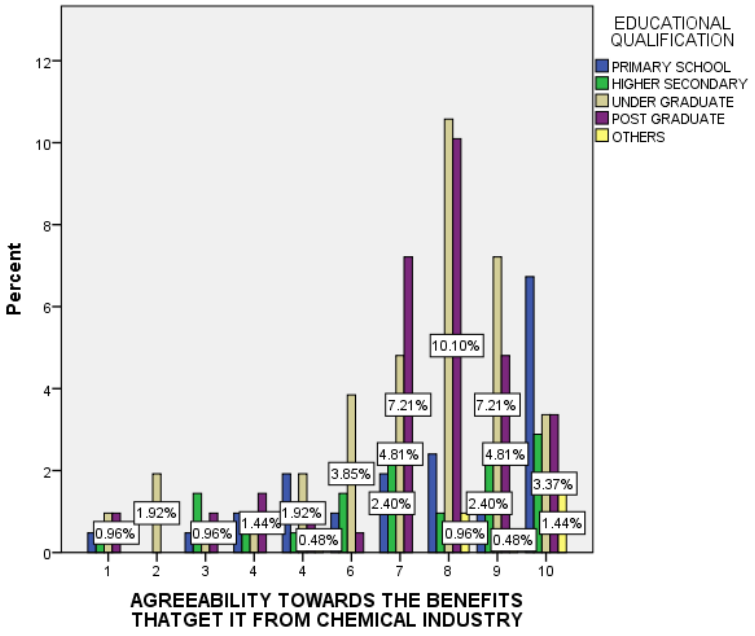
FIGURE 21:



LEGEND: The figure 21 represents the educational qualification and most dangerous in the chemical industry of the respondent.

FIGURE 22:



LEGEND: The figure 22 represents the educational qualification and agree ability towards benefits that get it from in the chemical industry of the respondent.

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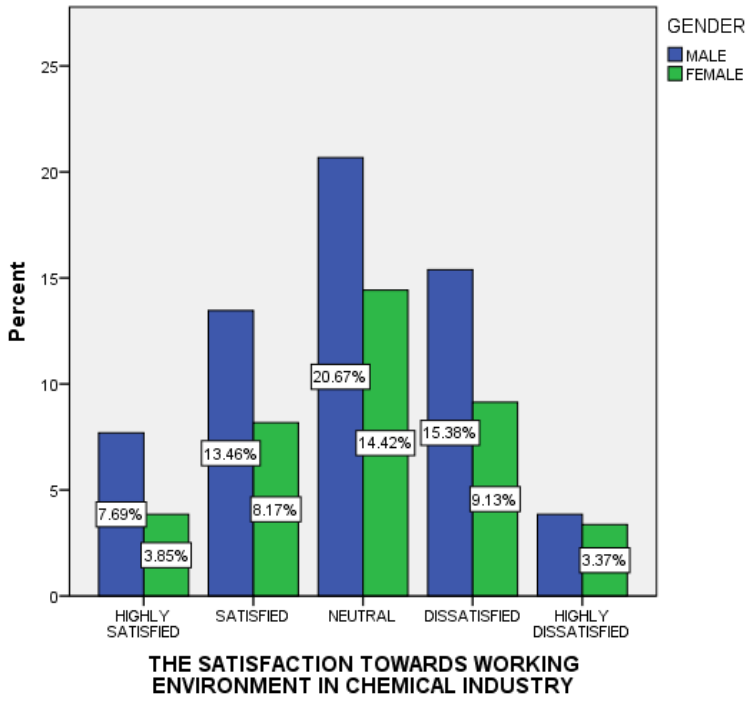
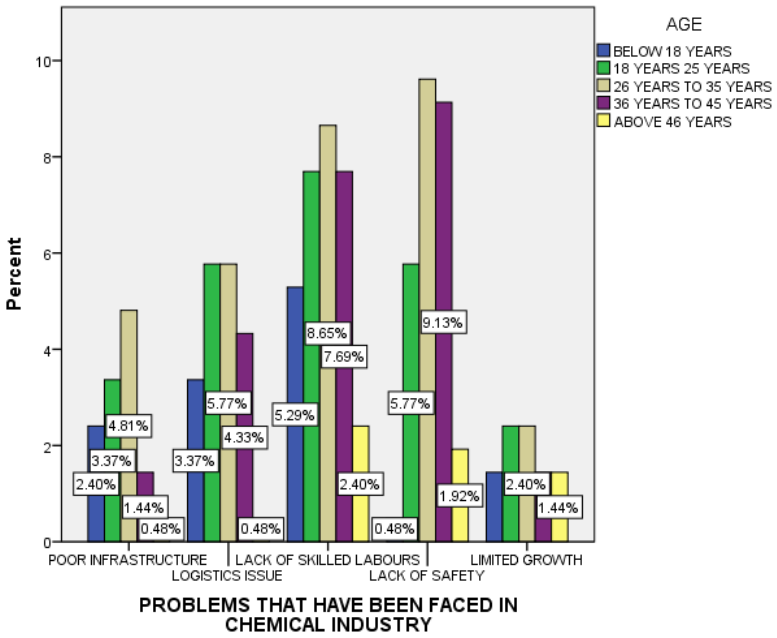
FIGURE 23:



LEGEND: The figure 23 represents the gender and satisfaction towards working environment in the chemical industry of the respondent.

FIGURE 24:



LEGEND: The figure 24 represents the age and problems that have been faced in the chemical industry of the respondent.

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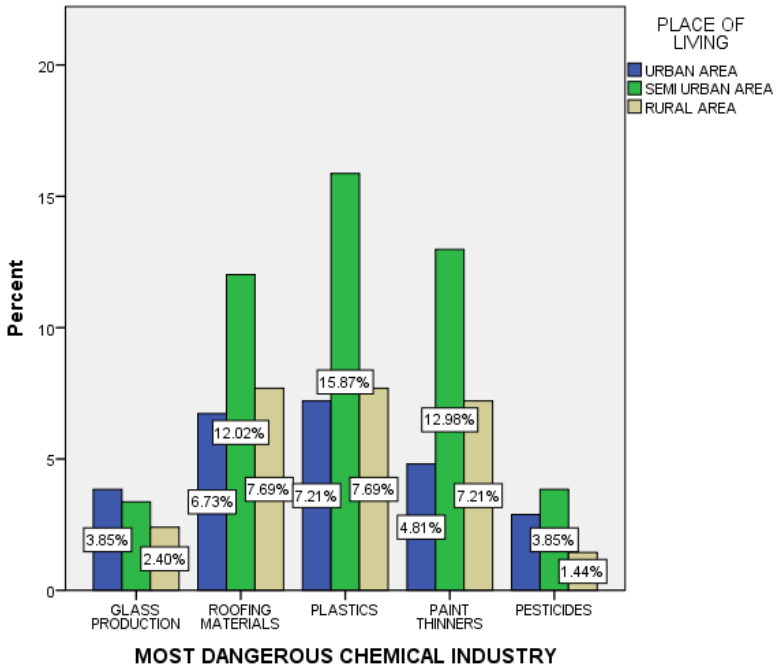
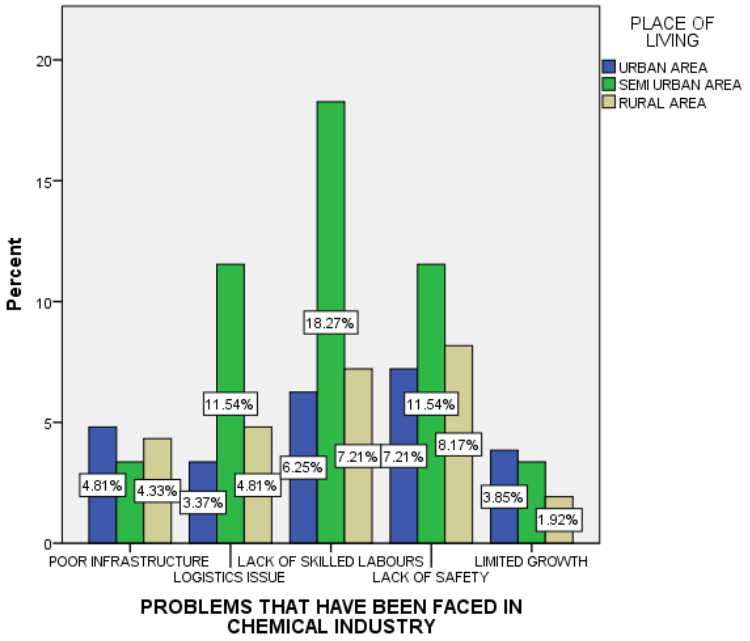
FIGURE 25:



LEGEND: The figure 25 represents the place of living and most dangerous in the chemical industry of the respondent.

FIGURE 26:



LEGEND: The figure 26 represents the place of living and problems that have been faced in the chemical industry of the respondent.

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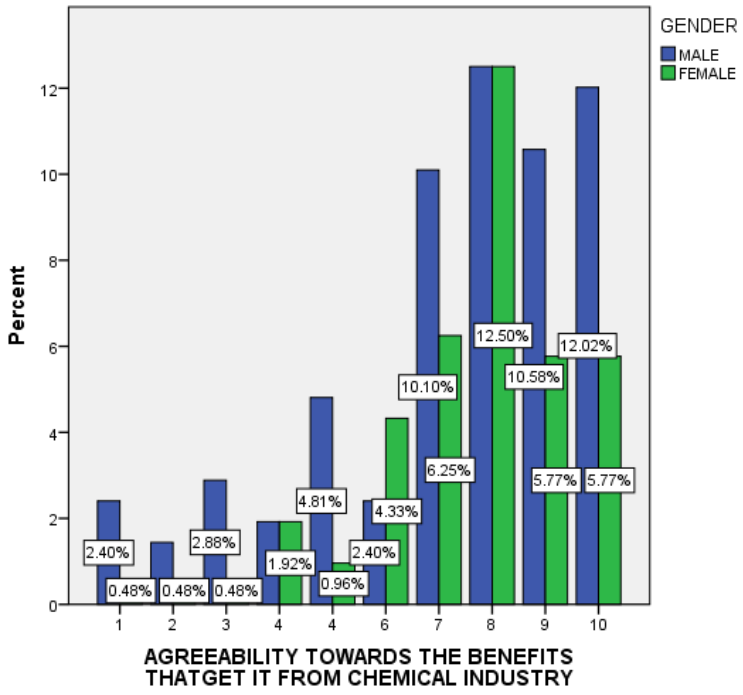
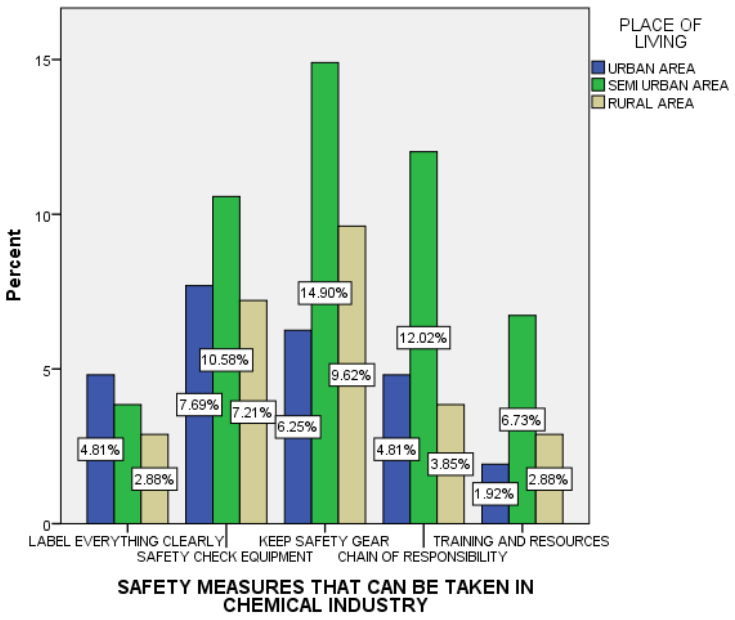
FIGURE 27:



LEGEND: The figure 27 represents the gender and agree ability towards benefits that get it from in the chemical industry of the respondent.

FIGURE 28:



LEGEND: The figure 28 represents the place of living and safety measures that can be taken in the chemical industry of the respondent.

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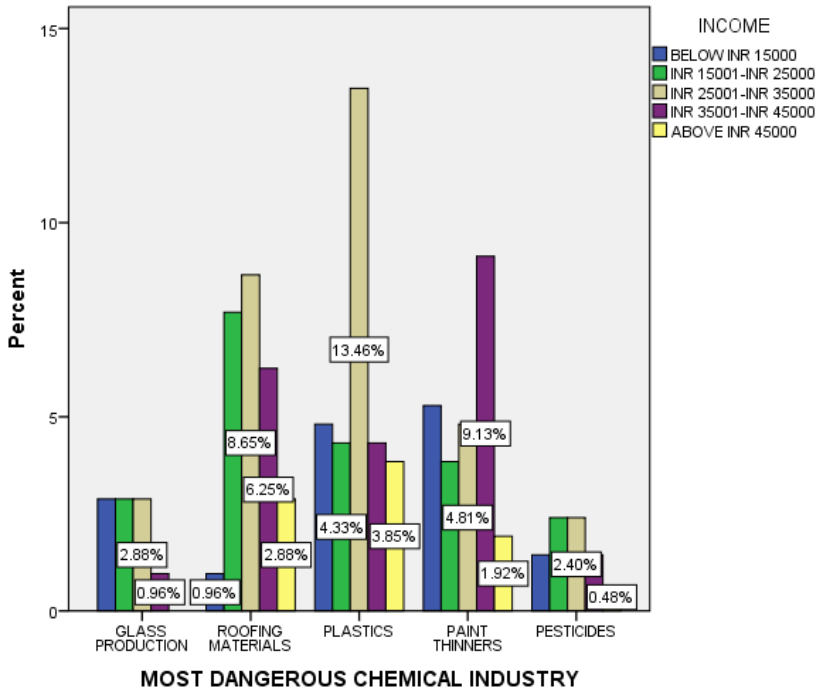
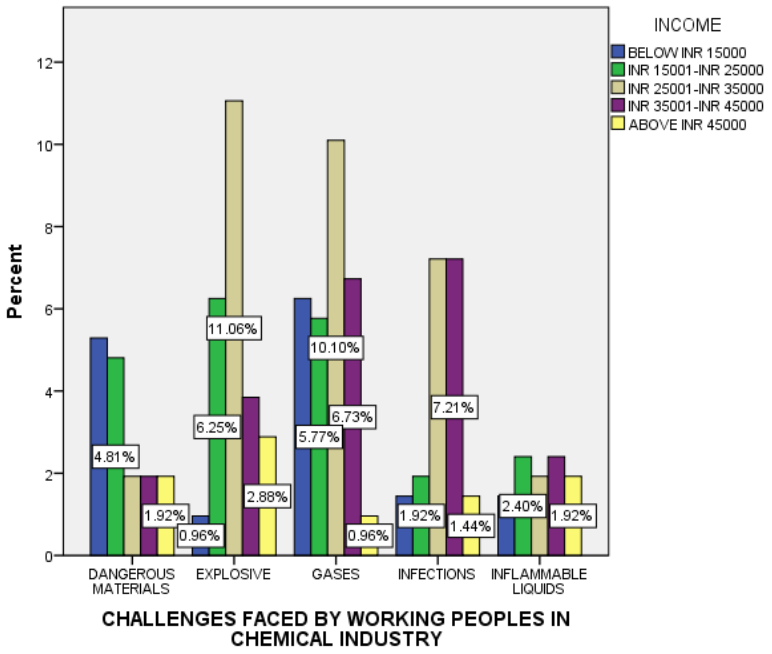
FIGURE 29:



LEGEND: The figure 29 represents the income and most dangerous in the chemical industry of the respondent.

FIGURE 30:



LEGEND: The figure 30 represents the income and challenges faced by working people in the chemical industry of the respondent.

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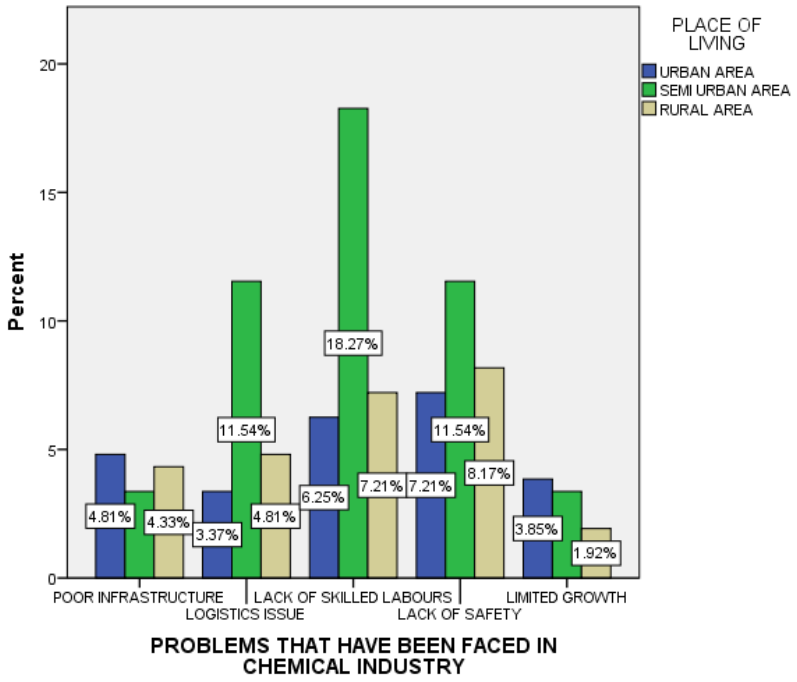
FIGURE 31:



LEGEND: The figure 31 represents the place of living and problems that have been faced in the chemical industry of the respondent.

RESULTS:

FIGURE 1 represents the satisfaction towards the working environment in chemical industry the highest response is neutral 8.65% and the highest response is neutral and the least response is highly satisfied that is 0.96% **FIGURE 2** represents the satisfaction with working environment in chemical industry with the semi urban area highest response as neutral that is 9.13% and the least response as highly satisfied that is 3.37% **FIGURE 3** represents the challenges faced by working peoples the highest response as gases that is 19.71% and the least response as inflammable liquids that is 4.33% **FIGURE 4** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48% **FIGURE 5** represents the safety measures in chemical industry the highest response is keep safety in gear that is 11.54% and the least response is label everything that is 0.48% **FIGURE 6** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 7** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%. **FIGURE 8** represents the satisfaction with working environment in chemical industry with the semi urban area highest response as neutral that is 9.13% and the least response as highly satisfied that is 3.37% **FIGURE 9** represents the challenges faced by working peoples the highest response as gases that is 19.71% and the least response as inflammable liquids that is 4.33% **FIGURE 10** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48% **FIGURE 11** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 12** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%. **FIGURE 13** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48% **FIGURE 14**

represents the safety measures in chemical industry the highest response is keep safety in gear that is 11.54% and the least response is label everything that is 0.48% **FIGURE 15** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 16** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%.**FIGURE 17** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%.**FIGURE 18** represents the safety measures in chemical industry the highest response is keep safety in gear that is 11.54% and the least response is label everything that is 0.48%.**FIGURE 19** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 20** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 21** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48% **FIGURE 22** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%. **FIGURE 23** represents the satisfaction with working environment in chemical industry with the semi urban area highest response as neutral that is 9.13% and the least response as highly satisfied that is 3.37% **FIGURE 24** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96% **FIGURE 25** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48%. **FIGURE 26** represents the problem faced in the chemical industry. The highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96%. **FIGURE 27** represents the agreeability towards the benefits that get in chemical industry the highest response is 8 that is 13.46% and the least response is 3 that is 0.96%. **FIGURE 28** represents the safety measures in the chemical industry. The highest response is to keep safety in gear that is 11.54% and the least response is to label everything that is 0.48%. **FIGURE 29** represents the dangerous chemical industry as the highest response is plastic that is 8.65% and the least response is pesticides that is 0.48%. **FIGURE 30** represents the challenges faced by working peoples, the highest response as gases that is 19.71% and the least response as inflammable liquids that is 4.33%. **FIGURE 31** represents the problem faced in chemical industry the highest response is lack of skilled labours that is 10.58% and the least response is limited growth that is 0.96%

DISCUSSIONS:

FIGURE 1 high percentage of neutral responses could reflect ambivalence or mixed feelings about the workplace. Employees may appreciate some aspects of their job, such as compensation or benefits, but may have concerns about other areas, such as safety, workload, or exposure to hazardous chemicals. **FIGURE 2** A significant portion of respondents from semi-urban areas feel neutral about their working environment. This indicates a general sense of indifference or uncertainty regarding job satisfaction, where workers neither feel extremely dissatisfied nor highly satisfied with their working conditions. **FIGURE 3** Gases can be particularly dangerous because they are often invisible and odorless, making them harder to detect without proper equipment. This puts workers at risk of prolonged exposure and potential health issues, such as respiratory problems, chemical poisoning, or even fatal accidents. **FIGURE 4** concerns could be related to exposure to harmful chemicals during the production or disposal of plastic products, as certain plastics, especially when burned or processed at high temperatures, can release

carcinogens and other toxic emissions. Additionally, the environmental impact of plastic waste, including its long-term toxicity, may contribute to perceptions of the industry's danger. **FIGURE 5** The prominence of this response suggests that workers recognize the immediate importance of personal protection and believe that maintaining the right safety gear is fundamental in minimizing risks. The use of safety gear also acts as a first line of defense in preventing chemical burns, respiratory issues, and other health hazards associated with chemical exposure. **FIGURE 6** Lack of skilled labor is identified as the biggest challenge in the chemical industry, with respondents indicating it as a significant issue. This reflects the growing demand for highly trained workers who are capable of handling the complex and often hazardous tasks involved in chemical production, safety, and innovation. **FIGURE 7** A rating of 8 typically states that the respondents feel they are receiving adequate compensation, job security, or other work-related benefits. It could also reflect a sense of professional development opportunities and a positive work environment, but with room for improvement in certain areas. **FIGURE 8** The high percentage of neutral responses suggests that a significant portion of employees may neither feel satisfied nor dissatisfied with their working environment. **FIGURE 9** The high percentage of responses indicating gases as a challenge highlights significant concerns related to Workers being exposed to harmful or toxic gases, leading to respiratory or long-term health issues. **FIGURE 10** The plastic industry is often associated with environmental and health hazards, which may contribute to its high ranking Production processes releasing harmful gases, including volatile organic compounds and greenhouse gases. **FIGURE 11** The highest response indicates that the chemical industry faces a critical shortage of skilled workers.The chemical industry requires specialized knowledge in chemistry, engineering, and safety, making it challenging to find qualified workers. **FIGURE 12** The high response in this category suggests that the industry has implemented measures to provide value to its workforce, leading to general contentment among employees.The minimal percentage of employees who rated their agreement at this low level may reflect,Specific cases of dissatisfaction due to inadequate benefits in certain organizations or regions. **FIGURE 13** These findings provide valuable insights into the public and workforce perceptions of risk in these industries.The production of plastics often involves harmful chemicals, significant carbon emissions, and contributes to pollution. **FIGURE 14** The low percentage for this measure may indicate that labeling is seen as a standard practice and not a unique or prioritized safety concern Possible reasons for this low response.Most chemical industries already adhere to labeling regulations so workers may take it for granted. **FIGURE 15** The chemical industry demands highly specialized skills for roles involving complex machinery, hazardous material handling, and compliance with safety protocols.A skills gap exists due to insufficient training programs, a disconnect between academic preparation and industry requirements, or a lack of experienced professionals in semi-urban or rural areas. **FIGURE 16** The prominence of keep safety in gear suggests that personal protective equipment (PPE) is seen as the most important safety measure in the chemical industry. This aligns with the industry's emphasis on safeguarding workers from immediate physical hazards. **FIGURE 17** The largest portion of employees indicates a relatively high level of satisfaction with the benefits they receive. This suggests that the chemical industry is seen as providing competitive and valuable benefits, which may include often a major benefit in industrial sectors, especially in industries like chemicals, where workers may face exposure to hazardous materials. **FIGURE 18** The prioritization of PPE suggests that ensuring the availability, quality, and proper use of safety gear is crucial in fostering a safe work environment. However, it also emphasizes a reactive safety culture,

where personal protection is seen as the first line of defense rather than focusing on proactive measures like hazard elimination. **FIGURE 19** The issue of lack of skilled labor is a major challenge, reflecting a growing concern about the availability of qualified workers in the chemical industry.The specialized nature of the chemical industry requires workers to have specific technical skills and knowledge in areas such as chemical safety, equipment operation, and regulatory compliance. **FIGURE 20** The lack of skilled labor being the highest concern suggests that the chemical industry is struggling to find workers with the necessary expertise in the safe handling and processing of chemicals, including knowledge of advanced technologies and equipment, is critical. **FIGURE 21** Plastic being the most frequently cited dangerous chemical may seem surprising at first, as plastics are commonly used in a variety of industries. However, several factors could explain this perception,Plastics often contain hazardous chemical additives, such as plasticizers, flame retardants, and stabilizers. **FIGURE 22** The chemical industry is known for offering well-paying jobs, particularly for skilled labor, which could be a key reason why many employees view the benefits positively.The industry might provide clear career growth paths, professional development, and training, which contribute to workers feeling. **FIGURE 23** The neutral response being the most common suggests that many employees feel neither strongly satisfied nor dissatisfied with their working environment. This could indicate several possibilities.Employees may feel that the working conditions are neither exceptional nor problematic. **FIGURE 24** The lack of skilled labor being the most cited issue is a significant concern for the chemical industry. Skilled labor is crucial for maintaining high safety standards, operational efficiency, and innovation. The challenges related to this issue include,Training and development gaps may be a shortage of workers who possess the specialized knowledge required to handle complex processes and hazardous chemicals. **FIGURE 25** The manufacture of plastics involves the use of toxic chemicals and high temperatures that can create dangerous fumes or by-products. For example, the process of creating certain types of plastics, like PVC, can release chlorine gases or dioxins, which are harmful to both humans and the environment. **FIGURE 26** The perceived lack of skilled labor highlights a significant concern in the chemical industry, where both operational efficiency and safety are highly dependent on the expertise of the workforce. The relatively low concern about limited growth may indicate a degree of stability in the industry. **FIGURE 27** Employees may feel they are adequately compensated for their work, including salary, bonuses, and other financial incentives.Work Life balance The industry may offer benefits such as paid leave, flexible working hours, or family support, which employees find valuable. **FIGURE 28** The highest response indicates that the most commonly implemented or emphasized safety measure in the chemical industry is ensuring that safety protocols and equipment are actively used or in gear. **FIGURE 29** The fact that plastics are seen as dangerous may point to increasing awareness of environmental and health risks associated with plastic production and disposal. It is essential for companies to ensure that the risks associated with plastics, especially during production, storage, and disposal, are well-managed. **FIGURE 30** While flammable liquids may still pose significant hazards in terms of fire and explosion risks, the lower response suggests that workers may perceive the risks associated with these chemicals as manageable, especially with the right safety measures and equipment in place. **FIGURE 31** There may be a gap in specialized training and education programs that adequately prepare workers for the evolving demands of the chemical industry. This could be exacerbated by a lack of access to quality technical education in certain regions or by an insufficient emphasis

LIMITATION:

The focus of the study on the chemical industry in Chennai may limit the generalizability of the findings to other regions or countries with different regulatory frameworks, safety standards, or industry practices.The chemical industry in Chennai may have different environmental health concerns or safety practices than industries in other regions of India or internationally.

SUGGESTION:

The study could further explore the safety culture and employee engagement within organizations, as these factors play a significant role in reducing accidents and improving overall health outcomes. By examining how workers perceive safety leadership, training programs, and company policies, more effective strategies for promoting safety awareness and workplace well-being can be identified.Encouraging a culture of improvement in safety, workers actively participate in identifying and mitigating risks, could enhance worker satisfaction and minimize toxic chemical exposure.

CONCLUSION:

The **aim** is to analyse the additional burden that workers and their families face from non-fatal injuries resulting in disability. The **finding reveals** that industries coupled with climate change, present unique health risks to communities living near industry as a result of exposures to toxicants. Both rural and inner city India are typically understood as sites of concentrated poverty, dumping grounds for locally unwanted land uses and continue to be a focus for research on industrial exposures. The **Study Recommends** toxic pollution and stress related to fear of potential chemical or climate disasters may increase the health burden on these fenceline communities. These hazards are amplified by other negative socioeconomic and health factors, including higher rates of chronic diseases, lack of access to healthy foods, substandard housing, and stress from racism, poverty, unemployment, and crime. As extreme weather events become increasingly frequent, exposure and health disparities faced by fenceline communities are anticipated to amplify as a result of climate change. These communities not only face additional burdens due to potential toxic releases, but often do not have the social or financial resources to mitigate their exposures. In **Future research** the identification of environmental hazards and human exposures in fenceline communities remains highly valuable information for self-protection, pollution prevention, and remediation, issues that are all of concern in communities facing environmental injustice. Such research can fill gaps in government data available at a local level, draw attention to disproportionate exposures to environmental hazards that were being denied by polluters or overlooked by regulators, and garner credibility for action to reduce environmental health disparities. In **Conclusion** many cases, it is insufficient to show that pollutants exist in the environment; it may also be necessary to demonstrate people's exposure to such pollutants and that exposure causes adverse health effects. As a result, the burden of scientific proof of environmental harm falls on affected communities, not polluters.

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