



International Journal of Institution of Safety Engineers (India) **IJISEI**

Volume 6, Issue 1, January-March 2023

Published by Institution of Safety Engineers (India)
(Regd. By Govt. of India)

Available online at www.ijournal.iseindia.in
www.iseindia.in

IJISEI



International Journal of Institution of Safety Engineers (India)
IJISEI
Available online www.ijournal.iseindia.in

IJISEI

IJISEI



IJISEI

IJISEI

International Journal of Institution of Safety Engineers (India) is Published by Institution of Safety Engineers (India). Institution of Safety Engineers (India) is Non-Profitable organisation established in year 2012. Formerly Run under ZJEW Trust, Govt. Reg. No. 5240 & Regd. By Govt. of India and publishing online Journal since 2018 on name of International Journal of Institution of Safety Engineers (India). Journal publishing in four Issue in every year i.e one issue in every three month. International Journal of Institution of Safety Engineers (India) is also known as IJISEI in short form. Objective to publish this Journal is to share information, knowledge among researcher, Professional and organization. Such Journal helps to grow their professional carrier & used for research purpose. Safety, Health & Environment related Journal is very helpful for professional, Institutional, organizational to learn and implement effective system to Prevent Accident, Protect environment and minimize losses during Disaster.

IJISEI

International Journal of Institution of Safety Engineers (India)





International Journal of Institution of Safety Engineers (India)

(IJISEI)

Volume 6, Issue 1, January-March 2023; Available online at www.ijournal.iseindia.in

www.iseindia.in



Institution of Safety Engineers (India)

“Aim to prevent Accident, Protect Environment & Minimises Losses during disaster”

www.iseindia.in



About us: Institution of Safety Engineers (India) is Non - Profitable organization set up in year 2012 under ZJEW Trust & Regd. Govt. of India and working with objective to Prevent accident, Protect environment & minimize losses during disaster. Institution of safety engineers (India) imparting safety, health, environment & quality related training to needy & provide similar services to industries, organization, institution to achieve zero harm.





TRAINING & SERVICES

**EHSQ Training & Services Conducted
 by Institution of Safety Engineers (India)**

Lead auditor & Short Term Training

Lead Auditor Training

- ISO 45001:2018 (OHSMS)
- ISO 9001:2015 (QMS)
- ISO 14001:2015 (EMS)

Diploma/ Certificate course

- Safety Mgt.,
- Fire Safety,
- Industrial Safety & Fire
- EHS Mgt.
- Quality Mgt.
- HIRA, HAZOP, BBS, EIA etc.

International certification course

- ISE-ICCOHSEM (International Certificate Course in Occupational Health Safety & Environmental Mgt.)
- ISE-ICCOHSEM (International Certificate Course in Occupational Health Safety & Environmental Mgt.)
- ISE-IDOHSEM (International Diploma in Occupational Health Safety & Environmental Mgt.)
- ISE-SM (Safety Management At workplace)
- ISE-TQM (Total Quality Mgt.)
- ISE-EM (Environmental Mgt. at work place)

Membership Services

Join Membership & Entitle with your name as SMISE/MISE/JMISE/CMISE



Safety, Health, Environment Related Training & Services

- Services for Safety Audit, Fire Safety Survey, Lighting Arrestor Survey, Road Safety Audit, HAZOP study, HIRA, EIA, DMP, EMP, EC, Environmental Monitoring etc.
- Consultation Services for EHSQ system implementation as per ISEI standard & Guidelines etc.
- Valuer, Loss Assessor Services etc.

Journal Publication

Publish Journal Quartely online on name of IJISEI.

For more Details Visit

www.iseindia.in
www.ijournal.iseindia.in



Services for ISO Consultancy, Auditing & Certification

ISEI, MSC



ISE (I) Award: Reward to Company, Institution, Professional & Author for their outstanding Contribution in field of Safety, Health, Environment & Quality.

For details information visit www.iseindia.in





International Journal of Institution of Safety Engineers (India)

(IJISEI)

Volume 6, Issue 1, January-March 2023; Available online at www.ijournal.iseindia.in
www.iseindia.in

This Issue Journal Include:

- **IJISEI-V6-I1** **¹ A BRIEF STUDY OF CLIMATE CHANGES**
- **IJISEI-V6-I1** **² EFFLUENT QUALITY STANDARDS FOR PAPER MILLS**
- **IJISEI-V6-I1** **³ A STUDY OF RISK RELATED TO ELECTRICITY**
- **IJISEI-V6-I1** **⁴ HOW TO CONTROL TO INDUSTRIAL ACCIDENT**
- **⁵WASTE MANAGEMENT SYSTEM**
- **⁶CONTROLLING RISK RELATED TO ASBESTOS**
- **⁷HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM**





Plan Prevent Protect

Safety Activity Conducted during 1st Quarter 2023

Plan Prevent Protect

INSTITUTION OF SAFETY ENGINEERS (INDIA)
इंस्टीट्यूशन ऑफ सेफ्टी इंजीनियर्स (इंडिया)

WEBINAR ON ROAD ACCIDENT PREVENTION CONDUCTED BY INSTITUTION OF SAFETY ENGINEERS (INDIA)
On 17th January 2023, Time 04:00 PM - 05:00 PM



REPORT OF WEBINAR

Category	Count
Partial Certified	~100
Satisfied	~400
Fully Satisfied	~450
Feedback received	~450
Participated	617

SPEAKER

MR. ALOK PATHAK: HOD Safety, Gujarat Cement work (Unit of Ultra Tech Cement Limited), CEng (OH&S), SMISE, PGDIS, B.Tech, MBA, PGHRM, PhD (Scholar).

S. Rampuri: Chairman, Institution of Safety Engineers (India)

Website: www.iseindia.in
Email id: info@iseindia.in

WEBINAR CONDUCTED BY ISEI
"OUR AIM ZERO HARM"
ON THE OCCASION OF NATIONAL SAFETY WEEK 2023
5TH MARCH 2023



INSTITUTION OF SAFETY ENGINEERS (INDIA)
ISEI[®] (INDIA) ISEI[®]





¹A BRIEF STUDY OF CLIMATE CHANGES

Shahnawaz Rampuri,
PhD (Scholar), Arunodaya University - Arunachal Pradesh
Email id: shahnawazhs@yahoo.in

ABSTRACT

Climate change is the long-term changes in the Earth's climate due to human activities such as burning fossil fuels, deforestation, and agriculture, which release greenhouse gases into the atmosphere. The effects of climate change include more frequent and severe heatwaves, droughts, floods, storms, and rising sea levels. Countries around the world have signed on to the Paris Agreement, which aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels. To achieve these goals, countries are working to reduce their greenhouse gas emissions through various measures such as transitioning to renewable energy sources and increasing energy efficiency. Collective action from governments, businesses, and individuals is required to address climate change.

KEYWORDS:

Climate change, Global warming, Greenhouse gases, Paris Agreement, Renewable energy, Energy efficiency, adaptation, mitigation, Environmental Safety, Earth safety.

1. INTRODUCTION:

Climate change refers to the long-term changes in the Earth's climate, particularly the increase in global temperatures, due to human activities such as burning fossil fuels, deforestation, and agriculture. These activities release greenhouse gases, particularly carbon dioxide, into the atmosphere, which trap heat and cause the planet to warm up.

The effects of climate change are already being felt around the world, including more frequent and severe heatwaves, droughts, floods, and storms. Rising sea levels are also threatening coastal communities and island nations.

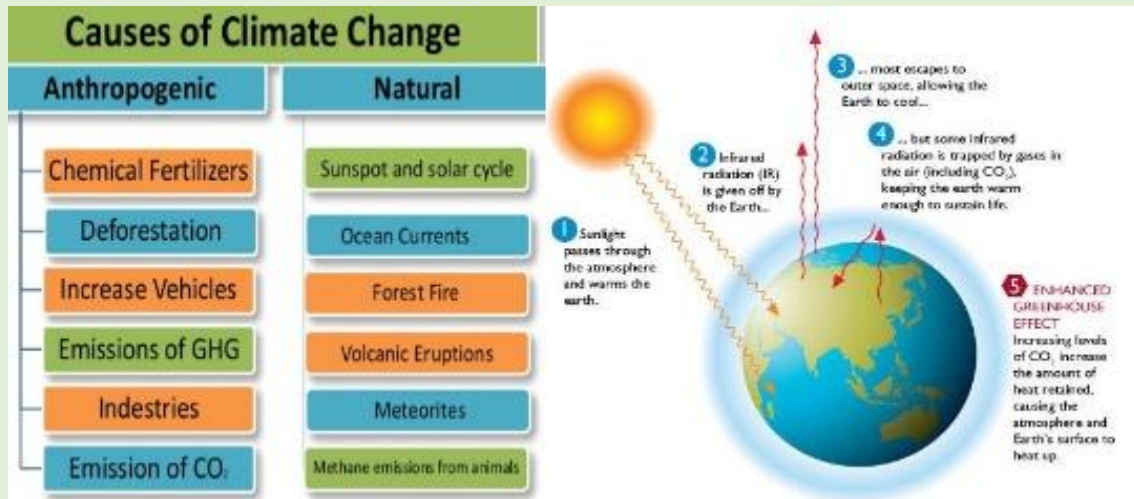
There is a scientific consensus that human activities are the primary cause of climate change. To address this issue, countries around the world have signed on to the Paris Agreement, which aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels, and to contribute efforts to limit it even further to 1.5 degrees Celsius.

To achieve these goals, countries are working to reduce their greenhouse gas emissions through measures such as transitioning to renewable energy sources, increasing energy efficiency, and



implementing policies to reduce emissions from transportation and industry. Additionally, there is a growing focus on adaptation measures, such as building seawalls and improving water management, to help communities prepare for the impacts of climate change that are already underway.

It is clear that addressing climate change will require collective action from governments, businesses, and individuals around the world.



2. EFFECTS OF CLIMATE CHANGES

The effects of climate change are numerous and far-reaching, affecting both natural systems and human societies. Few major consequences i.e effects of climate change are:

- Climate changes results severe weather events such as droughts, floods, heatwaves, Fire and storms.
- Rising sea levels due to the melting of glaciers and ice caps, which threaten coastal communities and island nations.
- Changes in precipitation patterns, leading to water scarcity in some regions and increased risk of flooding in others.
- Impacts on ecosystems, including changes in plant and animal populations, and alterations to habitats and food chains.
- Impacts on human health, including increased incidence of heat-related illnesses, respiratory diseases, and infectious diseases.
- Economic impacts, including damage to infrastructure and property, loss of agricultural productivity, and increased costs associated with adapting to climate change.
- Political and social impacts, including displacement of populations due to sea level rise and other climate-related events, and increased risk of conflict and instability in vulnerable regions.

It is important to note that the effects of climate change are not uniform across regions or populations, and some groups, such as low-income communities and marginalized populations, are more vulnerable to the impacts of climate change than others.

- Ocean acidification: As the ocean absorbs more carbon dioxide from the atmosphere, it becomes more acidic, which can harm marine life such as coral reefs and shellfish.
- Loss of biodiversity: Climate change can cause species to go extinct or shift their ranges, disrupting ecosystems and reducing biodiversity.

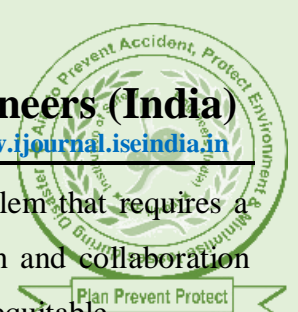


Fig. 2, Effect of Climate changes

These effects of climate change are interconnected and can have cascading impacts on natural and human systems. Reducing greenhouse gas emissions and adapting to the impacts of climate change will require a coordinated global effort.

- Reduce greenhouse gas emissions: The most important step in addressing climate change is to reduce the amount of greenhouse gases that are released into the atmosphere. This can be done by transitioning to renewable energy sources, increasing energy efficiency, and reducing emissions from transportation and industry.
- Invest in climate adaptation: Even with significant efforts to reduce emissions, some degree of climate change is inevitable. Investing in climate adaptation measures, such as building seawalls and improving water management, can help communities prepare for the impacts of climate change that are already underway.

- Support research and development: Continued research and development into new technologies and approaches to address climate change will be critical to achieving global climate goals.



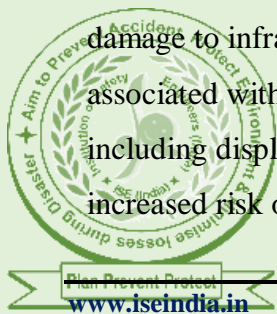
➤ Encourage international cooperation: Climate change is a global problem that requires a coordinated international effort. Encouraging international cooperation and collaboration can help ensure that efforts to address climate change are effective and equitable.

- Raise public awareness: Increasing public awareness of the causes and impacts of climate change can help build support for action and encourage individuals to take steps to reduce their own carbon footprints.
- Support policy solutions: Governments can play a critical role in addressing climate change by implementing policies that incentivize emissions reductions and support climate adaptation efforts.
- Reduce consumption and waste: Reducing consumption and waste can help to reduce greenhouse gas emissions, conserve natural resources, and promote sustainability.
- Support reforestation and afforestation: Planting trees and preserving forests can help to absorb carbon dioxide from the atmosphere and promote biodiversity.
- Support sustainable agriculture: Sustainable agriculture practices can help to reduce greenhouse gas emissions, improve soil health, and promote food security.
- These suggestions, if implemented effectively and on a large scale, can help to mitigate the impacts of climate change and create a more sustainable future for all.

3. WHY IS CLIMATE CHANGE A PROBLEM?

Climate change is a problem because it poses significant threats to natural systems and human societies. The increase in global temperatures due to human activities such as burning fossil fuels, deforestation, and agriculture, causes changes in climate patterns and weather events that can lead to a range of negative impacts.

The effects of climate change include more frequent and severe weather events such as heatwaves, droughts, floods, and storms. Rising sea levels due to the melting of glaciers and ice caps threaten coastal communities and island nations. Changes in precipitation patterns lead to water scarcity in some regions and increased risk of flooding in others. Impacts on ecosystems, including changes in plant and animal populations, and alterations to habitats and food chains can lead to a loss of biodiversity. Impacts on human health, including increased incidence of heat-related illnesses, respiratory diseases, and infectious diseases, have been observed. Economic impacts, including damage to infrastructure and property, loss of agricultural productivity, and increased costs associated with adapting to climate change, have also been observed. Political and social impacts, including displacement of populations due to sea level rise and other climate-related events, and increased risk of conflict and instability in vulnerable regions are also possible.



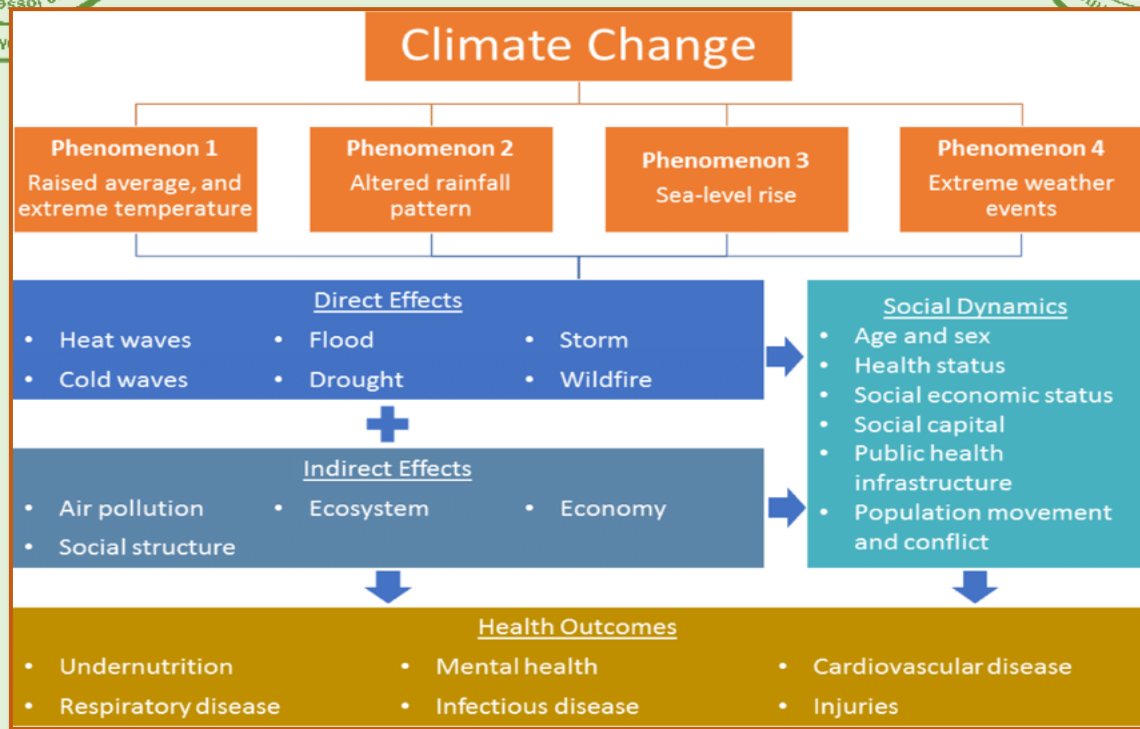


Fig. 3, Framework on climate change and its impact on health (adapted from Watts et al., 2015 2)

Overall, climate change is a problem because it poses significant risks to human health, ecosystems, economies, and societies. It is important to take action to reduce greenhouse gas emissions and address the impacts of climate change to create a more sustainable and resilient future.

4. RECCONMENDATION

- Based on the current state of climate change, here are some recommendations for individuals, organizations, and governments:
- Individuals can take steps to reduce their carbon footprint by reducing energy consumption, choosing low-emissions transportation options, eating a plant-based diet, and supporting sustainable products and practices.
- Organizations can adopt sustainable practices such as reducing waste, investing in renewable energy, and implementing eco-friendly policies.
- Governments can implement policies that incentivize emissions reductions, invest in renewable energy, and support climate adaptation efforts. They can also work together to create international agreements and policies that address climate change on a global scale.

Education and awareness campaigns can be developed to raise awareness about the importance of addressing climate change and to encourage action.

Research and development can be supported to develop new technologies and approaches to address climate change.



- Financial resources can be directed towards climate change mitigation and adaptation efforts.
- International cooperation and collaboration can be promoted to address climate change on a global scale.
- It is important to note that addressing climate change will require a collective effort from all sectors of society. By working together and taking action, we can mitigate the impacts of climate change and create a more sustainable future for generations to come.

5. CONCLUSION

Climate change is a global problem that poses significant threats to natural systems and human societies. It is caused primarily by human activities such as burning fossil fuels, deforestation, and agriculture, which release greenhouse gases into the atmosphere. The effects of climate change are numerous and far-reaching, including more frequent and severe weather events, rising sea levels, changes in precipitation patterns, impacts on ecosystems and human health, economic impacts, and political and social impacts.

To address climate change, individuals, organizations, and governments must take action to reduce greenhouse gas emissions, invest in climate adaptation measures, support research and development, and promote international cooperation and collaboration. It is also important to raise public awareness about the importance of addressing climate change and to support policies and practices that promote sustainability and reduce consumption and waste. Climate change has positive & negative consequences. Negative consequences are very disastrous for us and future generation, So need to take effective measure to prevent negative consequence.

While addressing climate change will require a significant effort from all sectors of society, it is an essential step towards creating a more sustainable and resilient future for all.

REFERENCE

- IPCC. (2014). Climate change 2014: Synthesis report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC.
- USGCRP. (2018). Fourth national climate assessment. U.S. Global Change Research Program.
- Climate Central. (n.d.). About Climate Central. Retrieved from <https://www.climatecentral.org/about>
- Climate Works Foundation. (n.d.). About. Retrieved from <https://www.climateworks.org/about>
- Nature. (n.d.). Nature climate change. Retrieved from <https://www.nature.com/nclimate/>





- Science. (n.d.). Science and climate change. Retrieved from <https://www.sciencemag.org/category/climate-change>

- Journal of Climate. (n.d.). Home. Retrieved from <https://journals.ametsoc.org/jcli/index.jsp>
- Sierra Club. (n.d.). Our mission. Retrieved from <https://www.sierraclub.org/mission>
- Greenpeace. (n.d.). About Greenpeace. Retrieved from <https://www.greenpeace.org/usa/about/what-we-do/>





EFFLUENT QUALITY STANDARDS FOR PAPER MILLS

Shamim A. Rayani

Assistant General Manager -HSE, Kanpur fertilizer & Chemical Ltd, Kanpur (UP)

Email id: shamim.rayani@gmail.com

ABSTRACT

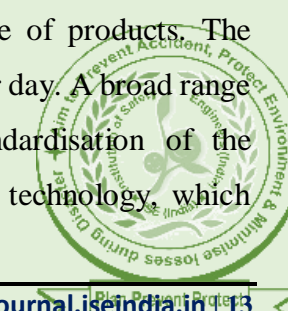
Water serves a variety of purposes just on planet and is among the most fundamental ingredients of life. Erosion of soil or rock by flowing water results in the movement of suspended, colloidal and dissolved constituents over great distances, often thousands of kilometres, before they are ever redeposited.

Because of the integration of human activity into the movement of material within natural waters, the contamination of these processes is rising. In order to reduce the amount of pollution load delivered to receivers, several treatment procedures are used. Water cleansing takes a long time in the natural world. Naturally occurring phenomena are imitated by man-made methods of treatment, but at a far faster pace than natural forces. Mechanical, physiological, chemical, and biological processes are all examples of methods of treatment that may be used alone or in tandem. Processes for wastewater treatment involve both conversion and separation operations. Bacteriological mechanisms or chemical precipitation into submerged and/or dispersed substances change the liquid and/or liquid components into dusty solids during processing. Clogging, filtration, and flotation are all methods of removing suspended compounds from water after they have been suspended.

The introduction of oxygen in into water, mixing, transporting, collecting, and lifting are all activities that need power to be accelerated. Therapeutic periods are reduced to less than 12 hours when such expedited procedures are used. Most conventional treatment approaches are inadequate by themselves, however, due to the high financial costs associated with these procedures. It is vital to conserve our environment and climate from further degradation, particularly for the sake of the survival of certain threatened animals. It is common practise to dump waste into the seas, streams, including lakes that are really the lifeline of many regional enviro, causing harm to whatever is reliant on these water supplies.

KEYWORDS: Waste Water, Paper Mill, Effluent, Water Pollution, Environment, Safety etc.

1. INTRODUCTION: The Indian paper industry is distinguished for its range of products. The production capability of the Indian paper mills ranges from 15 to 1500 tonnes per day. A broad range of raw resources are used in the Indian paper mills, which makes standardisation of the manufacturing process challenging. The industry employs a diverse range of technology, which



differs across sectors including within industries. The development of resource efficiency maintaining global competitiveness, managing with fibre scarcity, and resolving environmental concerns and difficulties are the most significant challenges confronting the Indian paper mills sector in the next years. Despite the fact that the Indian service sector has implemented a number of projects aimed at technological advancement and pollution prevention initiatives in recent years, performance indicators including such thermal efficiency, specific rainwater harvesting, and particular effluent generation have all improved. However, concerns of technological obsolescence as well as a lack of standardisation in the manufacturing process must be discussed urgently in task phase in order to paper industry to continue to grow in a sustainable way in the new group of protecting environment and in the face of global competing.

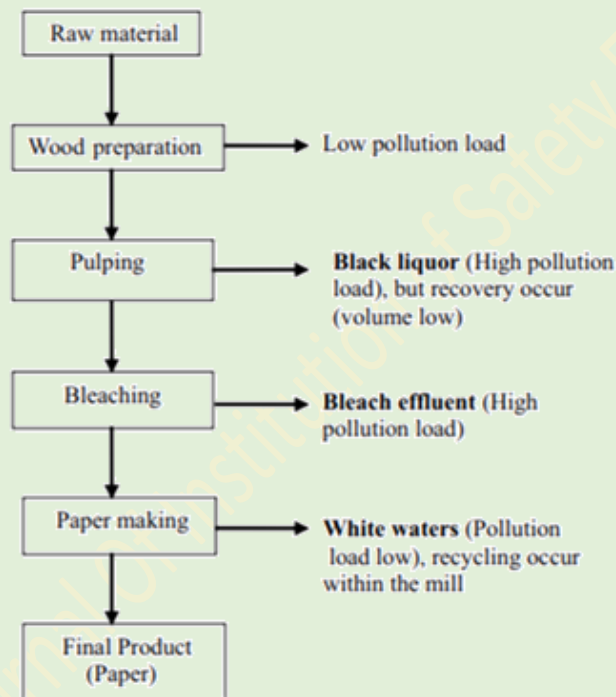


Figure 1.1: Wastewater sources in pulp & paper industries

2. Environmental Impacts of Industrialization

Industrialization (also known as industry) is a process that takes place in nations when they begin to employ technology to do tasks that were previously performed by humans. As urbanization progresses, it alters the social landscape. When a nation undergoes industrialization, people leave their rural occupations in order to seek higher-paying positions in industries in urban areas. Industrial growth is a stage in a process through which people embrace simpler and less expensive methods of producing goods. It becomes feasible to manufacture more items in a shorter period of time when greater technology is used to do so. A single individual may generate more than one item. People's occupations

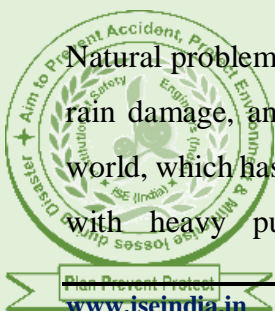


become increasingly specialised as a result of industrialisation. For example, prior to industrialisation a shoemaker was responsible for the entire shoe. He began by working solely on a single pair of shoes, completed that set, and then moved onto next pair of sneakers. As a result of industrialisation, there are a large number of individuals employed in the shoe manufacturing industry. An single shoemaker, on the other hand, has a more limited scope of work. There is one worker who is in charge of cutting the soles of the shoes. It is then stitched on by another individual. Briefly stated, there is a division of work. Because the machinery used to manufacture the shoes are expensive, the factory would be owned by a wealthy individual who can afford to purchase the equipment.

Mechanisation, in the name of economic development, has placed enormous burden on the environment. In emerging nations, industry and environmental protection are attempted to go hand in hand. However, whether consciously or unwittingly, industrialization outran the competition by running faster and with less regard for the environment. During the last year, the rate of industrialisation has grown by orders of magnitude. There is a good chance that the majority of the world's most serious environmental issues in the twenty-first century will be caused by the continuance and escalation of existing issues that are presently receiving insufficient political focus. In many nations, issues are either not observed at all or are not addressed at all even after they have been identified. Changing climate, freshwater shortages, deforestation, water pollutants, and population increase are among the most pressing concerns facing the world today. These issues are very complicated, and it is difficult to determine how they interact with one another. It is essential to consider issues in the context of social system as a whole. Even while the links between ecological problems are now well understood, we still lack precise knowledge on how the issues are related, to what extent they communicate, what the most successful interventions are. One issue is how to combine land- and moisture management in order to ensure food and water security for everyone. During the previous two decades, rapid industrialisation in order to fulfil consumer demand has wreaked havoc on the ecosystem to the greatest degree possible. In addition to being a threat to human health and the environment, industrial effluents, contaminated air, noise and vibration, and the Green House gas impact, among other things, are a source of worry for future calamities. For the sake of living a healthy life, we are degrading our surrounding environment inside the background.

Worldwide, as previously said, industries have become more concerned with attaining and exhibiting their environmental and social performance in order to comply with more stringent regulations and to respond to increased public demand.

Natural problems such as " the Bhopal tragic incident, Rhine river pollution, Chernobyl disaster, acid rain damage, and ozone layer depletion have increased public pressure on governments around the world, which has resulted in governments around the world enacting stringent environmental legislation with heavy punishments in environmental problems related to environmental and safety





systems". There are no particular environmental important role in affecting specified in these standards; rather, they are system norms that describe the planning of the environment in accordance with the company's climate issues as well as objectives and targets that have been defined in accordance with their considerable environmental impacts.

Due to rising compulsions from rigorous regulation and rising public criticism, industry has become more concerned about attaining and exhibiting solid sustainability impact. When the ecosystem was harmed by urban and animal activity, hardly one seemed to care. That was not so long ago. In addition to affecting the living conditions, pollutants have an impact on the social, economic, political and aesthetic of a society. In latest days, there has been an increase in public awareness of the dangers of environmental contamination.

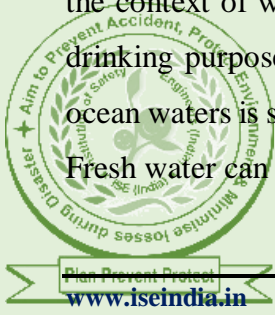
On the one side, scientific and technological breakthroughs have improved human pleasures by providing us with automobiles, electrical items, better medications, and better chemicals to control damaging insects and pests, though on the other side, they have created a very severe problem in the form of environmental pollution. Continuing pollution growth, along with the industrialization, has had a significant influence on natural resource depletion and exploitation. Financial development's long-term viability is jeopardized by the environment degradation and the rapid resource depletion that has resulted. Developing a feasible synthesis between trade and environmental behavior is one of the most serious and complicated concerns that our generation faces today.

2.1 Industrial Water Pollution

A significant cause of water contamination, industry generates chemicals that are exceedingly hazardous to both humans and nature. Freshwater is used by many industrial plants to transport waste away out from facility and into rivers, ponds, and seas, among other places.

In the case of water contamination, it occurs as a result of the release of dangerous chemicals and compounds into water, rendering the water unfit for drinking and other uses. This makes the water unusable for people and puts aquatic life in peril as a result.

Pollution is defined as the environmental contamination by detrimental and solid waste, which results in a significant deterioration in the composition of the outer air, hydrosphere, biosphere, land surface, and, increasingly, the performance of the surroundings. Pollution can occur anywhere on the planet. In the context of water pollution, it refers to the contamination of water, rendering them unsuitable for drinking purposes. Despite the fact that water covers 70% of the Earth's crust, the freshwater in the ocean waters is salty and, as a result, cannot be utilised for drinking, agricultural, or industrial purposes. Fresh water can only be found in bodies of water such as lakes, ponds, canals, aquifers, and streams.





Many chemicals are used in agricultural and manufacturing activity, and these chemicals may leach into the ground water and damage it. Steel mills and other industrial operations damage rivers and lakes with heavy metals and chemicals. Aquatic life is harmed and rendered sterile as a result of these pollutants.

Pesticides are being used to keep weeds, pests, and fungus under control. The aquatic life is poisoned by the chemicals that run off into the environment. The consumption of diseased fish by birds, people, and other animals has the potential to cause poisoning. Petroleum is a separate form of biological pollutant that may contaminate water if a ship ruptures, resulting in oil spills into the ocean. Oil spills have a localised impact on animals, but they have the potential to spread hundreds of kilometres. This oil has the potential to kill a large number of fish and adhere to the hair of birds. As a result, they lose their capacity to fly.

Pollution occurs when silt as well as other particles, such as soil, building materials, and runoff from ploughed lands, enter rivers and streams. In lakes, canals, and other bodies of water, nutrient enrichment happens naturally under certain circumstances. This is a normal aging process that causes silt and organic materials to accumulate in the water body. As a result of these sediments entering diverse bodies of water, fish breathing is hampered, while plant production and water depth are also reduced.

2.2 Industrial Effluents in the Water

Water pollution is produced by the discharge of home or urban wastewater, agricultural runoff, contaminants, and industrial discharges into waterways, among other things. Nowadays, the debris emitted by industrial units serves as the primary source of contamination. The waste products produced by many production plants, including acids, alkalies, hazardous metals, oil, grease, dyes, insecticides, and even radiological compounds, are disposed of in water bodies and rivers. PCB combinations, lubricants, and water heating produced by power plants are some of the other major pollutants to be concerned about. In most cases, the contaminants that are discharged into bodies of water decompose or stay submerged in water. They can also build on the bottoms of lakes and rivers from time to time. Oil spilt from oil tanks is yet another significant contaminant that has the potential of affecting marine life. On average, 1.3 million barrels of crude oil are dumped into Persian Gulf each year, and around 285 million gallons of diesel are poured into the seas each year, according to estimates from the United Nations. In addition to mesothelioma, phosphates, phenols, pesticides, toxic colours and other harmful elements, industrial effluents also include mercury, copper, nitrates, sulphur, sulfuric, oil, and a variety of other hazardous substances. In many nations, commercial water is not thoroughly cleaned before it is discharged into rivers and lakes, resulting in water pollution. This is especially true of small-scale enterprises which do not have the financial resources to invest in antipollution technology.





2.3 Organic Pollution Due to Industrialization

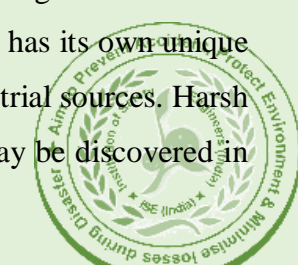
2.3.1 Organic Pollutants:

Persistent organic pollutants (POPs) are harmful compounds that have a negative effect on public health and the ecosystem all over the globe, including the United States. Because they may be transferred by wind or water, the majority of POPs produced in one nation can and do have an impact on humans and animals in other countries where they are utilised or discharged. They may remain in the environment for long durations and can collect and spread between one species to another along the food supply chain. POPs are compounds that stay in the ecosystem, micro via the food chain, and represent a hazard to public health and the ecosystem by creating detrimental consequences. As a result of the proof of long-distance travel of these materials to areas for which they have not been used or generated, as well as the dangers they face to the environment, the world community has already called for immediate global measures to stop and remove the discharge of these contaminants on a number of different occasions.

- Highly Toxic to human & the environment
- Persistent in the environment, resisting bio-degradation
- Taken up and bio-accumulated in terrestrial and aquatic ecosystem
- Capable of long-range, trans boundary atmospheric transport and deposition

These compounds have an impact on the development & growth of plants and animals in the wild. They have been linked to decreased reproductive fitness, birth abnormalities, behavioural disorders, and even mortality in certain cases. They are probable human carcinogenic, and they have the potential to affect the immunological and hormonal systems as well.

Surfactants are widely used in a variety of sectors, including textiles, fibres, food, paints, plastics, cosmetics, medicines, mining, oil reservoirs, pulp and paper, and laundry detergents, dishwashing solutions, and shampoos, among others. Surfactants are also used in a variety of industrial applications, including lubricant, polymerisation, textile manufacturing, mining mean working, hydrocarbon recovery, sewage treatment, and a variety of other goods and services. Harsh detergents are often used as absorbents in the aftermath of an oil spill. Dozens of chemicals may be employed as surfactants, and they are often classed according to their electrical activity in solutions: anionic, charged, non-ionic, or amphipathic. Each surfactants class does have its own set of characteristics that distinguish it from the others. Various sources of detergents are released into natural waterways, and each has its own unique composition. Textiles, surfactants, and detergent formulation are examples of industrial sources. Harsh detergents are also utilised in the laundry and in the home, and as a result, they may be discovered in





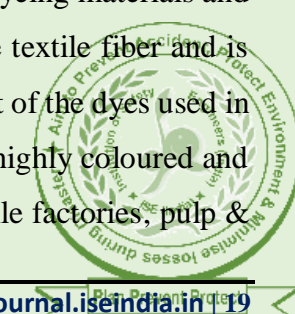
the effluent from wastewater treatment facilities. Pesticides, property of a set, and dispersants are some of the agricultural uses for these compounds.

Surfactants are organic molecules that have both hydrophilic and lipophilic or lipophobic groups in their structure. owing to the fact that they have both a hydrophilic and a chemical inertness, surfactants tend to focus at the integrations is something; the water - soluble part of cleaning agent tends to orient itself towards the aqueous medium and the hydrophobic tail of the foaming agent tends to orient itself apart from the aqueous solution into the phase

When it comes to surfactant molecules, the wet portion is often formed by distilling a hydrocarbon comprising 8 to 20 carbons (e.g. fatty acids, paraffins, olefins). In aqueous systems, the hydrophilic fraction may ionise (become cationic or polyatomic) or may stay un- ionized (non-ionic).

Solvents are responsible for formation of foams in streams and wastewater treatment facilities, as well as for lowering the overall water quality. Detergents are responsible for changes in the environment. When skin is exposed to surfactants for an extended period of time, the lipid layer that covers skin (as well as other) cells might be disrupted. The presence of surfactants in groundwater, such as bodies of water, may result in a detrimental scenario for aquatic biota, owing to the fact that they may interfere with oxygen transport by altering surface tension, resulting in a reduction in transfer of oxygen. Another potentially harmful aspect of these items is their tendency to bind with other harmful toxins (such as medications), which has the potential to disrupt ecological quality

Dyes are among the most common ingredients of wastewater created by a wide range of businesses, including textile, paints and varnish, ink, polymers, pulp and paper, skincare, tannery, and other related sectors, as well as by dye manufacturing companies themselves. Water contamination as a result of effluents from the dyeing and finishing industry is a major source of public concern. Color is a significant component of the human experience. We like wearing clothing in a variety of colours and hues, eating food that has been coloured, and even taking medications that are brightly coloured. Therefore, it comes as no surprise that a great deal of study went into the manufacture of colour. Today, there are over ten thousand colors available for purchase on the market, with seven lakh tonnes of dye being manufactured yearly. Dyes are available in a variety of structural types, including acidic, base, dispersion, azo, affects adversely, and metallic ions dyes, among others. Acidic, simple, and dispersion dyes are among the most common. The textile sector is the world's biggest user of dyeing materials and products. An extremely substantial proportion of the dyestuff does not bond to the textile fiber and is discarded into the waste stream during the colouring process. Around 10-15 percent of the dyes used in the dyeing process are discharged into the atmosphere, resulting in effluent that is highly coloured and aesthetically objectionable. Toxic residues from various sources (for example, textile factories, pulp &





paper businesses, dye and dye intermediates businesses, pharmaceutical industries, leather tanning and Kraft decolorization industries, and such.) are known a wide variety of environmental substances that have been introduced into water sources as well as treatment systems, according to the World Health

Organization. Environment-related difficulties associated with residue left dye subject matter or leftover colour throughout treated textile industries are always a source of concern for each fabric operator which thus directly discharges, including sewage treatment plants and advertising textile operational processes, in terms of adhering to the colour as well as lingering dye requirements imposed on treated textile wastewater discharges. High levels of dyestuff in water bodies reduce the reoxygenation ability of the receiving stream and block out sunlight, disrupting the bioactivity of aquatic life as well as the photosynthetic process of aquatic species or algae, according to the Environmental Protection Agency. With dyes, the most significant environmental problem is their absorbance and reflections of sunlight into the water, which results in a decrease in photosynthesis as well as the concentration of oxygen in river. In contrast, certain colours breakdown into chemicals that are poisonous, mutagenic, and cancerous to living organisms when exposed to them. Consequently, the wastewater from textile manufacturing facilities contains a huge variety of dyes as well as other chemicals that are applied during the dyeing and colouring procedure. In typical water treatment techniques, they are hard to remove, and they'll be carried readily via drains and rivers, particularly since they are engineered to have great water solubility. As a result, dyes have the potential to be harmful to living creatures. As a result, it is critical to protect the ecosystem against such toxins.

3. CONCLUSION: “Electrochemical wastewater treatment can be recommended as a feasible alternative for pulp and paper wastewater mitigation based on findings from an experimental setting. With respect to the decrease of organic load and colour of wastewater, the electrolytic approach that was tested produced good results. - For the paper industry's effluents, it should be underlined that colour reduction is of critical significance. Percentage reductions in COD and colour are almost equal to or more than 80 and 90, respectively. A viable tertiary treatment option for the paper industry, owing to the simplicity of the electrochemical approach, may be water treated by electrochemical technology, which would not present any problems in terms of recycling of the treated water To take care of the inorganics while also lowering the cost, the approach may be improved even further via optimization.

REFERENCES:

- Alexandersson T. (2002). Time variation in whitewater composition from two recycled paper mills. TEIE 7181, Dept. of Industrial Electrical Engineering and Automation, Lund University, Lund, Sweden, 2002.
- Awa Instruments SAS, Meylan, Zirst, France (2003). www.awa-instruments.com (April 22, 2003).





- Barascud M. C., Ehlinger F., Pichon M. and Ruoger J. (1992). COD removal in a closed water circuit of a papermill by an anaerobic fluidized bed reactor. *Wat. Sci. Tech.*, 26(1-2), 445-454.

- Barnett D. J. and Grier L. (1996). Mill closure forces focus on fines retention, foam control (Part 3). *Pulp & Paper*, 70(4), 89-.
- Berard P. (2000). Filling in the holes after closing the loop. *Pulp and Paper International*, April, 44-51.
- Blanco M. A., Negro C., Gaspar I. and Tijero J. (1996). Slime problems in the paper and board industry. *Appl. Microbiol. Biotechnol.*, 46(3), 203- 208.
- Boyko J., Anderson J. and Lockhart C. (1999). Reduction of paper machine water consumption - Significant savings can be made. *Pulp & Paper Canada*, 100(7), 42-45.
- Brock T. D. and Madigan M. T. (1991). *Biology of microorganisms*. Prentice Hall International Ltd. London, UK.
- Buchanan B. (1980). Closeup of whitewater system helps Menasha meet effluent standards. *Pulp & Paper*, March, 60-62.
- Charpentier J., Florentz M. and David G. (1987). Oxidation-reduction potential (ORP) regulation: A way to optimize pollution removal and energy savings in the low load activated sludge process. *Wat. Sci. Tech.*, 19(3-4), 645-655.
- Charpentier J., Godart H., Martin G. and Mogno Y. (1989). Oxidation- reduction potential (ORP) regulation as a way to optimize aeration and C, N, and P removal: experimental basis and various full-scale experiments. *Wat. Sci. Tech.*, 21(10-11), 1209-1223.
- Chaudhary A., Gupta L. K., Gupta J. K. and Banerjee U. C. (1997). Studies on slime-forming organisms of a paper mill - Slime production and its control. *J. Ind. Microbiol. Biotechnol.*, 18(5), 348-352.
- Danadurai, K. S. K. and Rajeswari S. (1999). Corrosion behaviour of 316L stainless steel and titanium-stabilized stainless steels in a paper- machine white-water system. *Corros. Prev. Control*, 46(2), 39-45.
- Danfoss Analytical A/S, Sønderborg, Denmark, (2003). www.danfoss.com/analytical (April 22, 2003).
- Degrémont. (1991). *Water Treatment Handbook*. Lavosier Publishing Inc., Secaucus, USA.





A STUDY OF RISK RELATED TO ELECTRICITY

Tamanna Afroj,

Director- Institution of Safety Engineers (India)

Email id: director@iseindia.in

ABSTRACT: Electricity is a fundamental and essential form of energy in modern society. However, it poses significant risks to both human life and property. The study of risk control related to electricity aims to mitigate these risks by identifying and assessing. Effective risk control related to electricity requires a comprehensive understanding of electrical systems and the hazards associated with them. This understanding must be coupled with proper training and education for individuals who work with or are exposed to electrical systems. In addition, proper maintenance, inspection, and testing of electrical systems are essential to ensure their continued safe operation. Overall, the study of risk control related to electricity is essential for promoting safe and effective use of electrical energy in our society. Through the identification, assessment, and control of potential hazards, we can minimize the risks associated with electrical energy ensure the safety of individuals and property.

Keywords: Electricity, Electrocutation, Fire, Risk control, Hazard identification, Risk assessment, Risk control measures, Engineering controls, Administrative controls, Personal protective equipment, Burn injury

OBJECTIVE:

Objective to conduct study and publish this paper is know about risk related to electricity and how to mitigate them.

1. INTRODUCTION

Electricity is a fundamental source of energy that powers much of modern society. However, it also poses significant risks to human life and property. Accidents related to electrical energy can cause electrocution, electrical shock, and fires, which can have severe consequences. Therefore, the study of risk control related to electricity is essential to ensure the safe use and distribution of electrical energy. The risk control process involves several steps, including: Hazard identification involves identifying potential sources of harm, such as electrical shock, electrocution, and fire caused by electrical malfunctions. Risk assessment involves evaluating the likelihood and severity of harm from identified hazards. Monitoring and review involve ongoing evaluation of the effectiveness of risk control measures and the identification of any new hazards.





The goal of risk control related to electricity is to identify, assess, and control potential hazards associated with the use of electrical energy. This process involves identifying potential sources of harm, evaluating the likelihood and severity of harm, and implementing measures to mitigate the identified hazards.

Effective risk control related to electricity requires a comprehensive understanding of electrical systems and their hazards. Individuals who work with or are exposed to electrical systems must receive proper training and education on electrical safety measures. Regular maintenance, inspection, and testing of electrical systems are also necessary to ensure their safe operation.

Overall, the study of risk control related to electricity is essential for promoting safe and effective use of electrical energy in our society. By identifying, assessing, and controlling potential hazards, we can minimize the risks associated with electrical energy and ensure the safety of individuals and property.

2. RISK RELATED TO ELECTRICITY

Electricity is very important in our daily life and it has negative impacts if not use safely. Risk of electricity may be Shock, Burn injury, person death, fire or other injury. The main hazards associated with electricity are:

- Contact with exposed live parts causing electric shock and burns (for example, exposed wiring or other electrical equipment coming into contact with metal surfaces such as metal floors or roofs)
- Defects or overload equipment or short circuit that could cause a fire
- Fire or explosion where electricity could be a source of ignition in a potentially flammable or explosive atmosphere (for example, in a paint spray booth).
- Person falling due to electric shock, etc.

3. HOW CAN WE CONTROL TO ELECTRICITY RELATED RISK?

Controlling electricity risk involves several measures that can be implemented to mitigate potential hazards associated with the use and distribution of electrical energy. These measures include:

- **Engineering controls:** These are measures that are built into electrical systems to control hazards. Examples include the installation of ground fault circuit interrupters (GFCIs), insulation, and shielding.

▪ **Administrative controls:** These are policies and procedures that are put in place to control hazards. Examples include establishing safety protocols for working with electrical systems, ensuring proper training and education for workers, and conducting regular safety audits.





- **Personal protective equipment (PPE):** These are items that workers can wear to protect themselves from electrical hazards. Examples include rubber gloves, safety glasses, and arc flash suits.

- **Maintenance, inspection, and testing:** Regular maintenance, inspection, and testing of electrical systems are essential to identify potential hazards and ensure the continued safe operation of these systems.
- **Hazardous energy control (lockout/tagout):** This is a procedure that prevents the accidental release of hazardous energy during maintenance, repair, or other servicing activities.
- **Risk assessment:** Conducting a risk assessment can help identify potential hazards associated with electrical systems and determine appropriate control measures to mitigate these hazards.
- **Emergency response planning:** Having an emergency response plan in place can help mitigate the consequences of electrical accidents by ensuring a timely and appropriate response to incidents.

In summary, controlling electricity risk requires maintenance, inspection, testing, risk assessment, and emergency response planning. Power routed through safety tripping devices, Training & close supervision to prevent unsafe practices help to control risk related to electricity. Implementing these measures can help ensure the safe use and distribution of electrical energy and minimize the risks associated with electrical hazards.

4. WHY ELECTRICAL SAFETY IS IMPORTANT?

Electrical safety is important because electricity is a powerful and potentially dangerous source of energy that is present in almost every aspect of modern life. Accidents related to electricity can cause serious injury, property damage, and even death. Therefore, it is essential to take precautions to ensure the safe use and distribution of electrical energy.

Here are some reasons why electrical safety is important:

- a) **Human safety:** Electricity can cause severe injuries such as electrocution, electrical shock, burns, and even death. By implementing appropriate safety measures, we can protect individuals from these hazards and ensure their safety.
- b) **Property protection:** Electrical malfunctions can cause fires, which can result in property damage and financial losses. Proper electrical safety measures can help prevent such incidents.
- c) **Compliance:** Compliance with electrical safety regulations and standards is important for avoiding legal and financial penalties and maintaining a good reputation.





d) **Business continuity:** Electrical accidents can disrupt operations and cause downtime, resulting in lost productivity and revenue. Proper electrical safety measures can help prevent such disruptions.

e) **Public safety:** The safe distribution of electrical energy is essential for public safety.

Electrical accidents can cause widespread damage and endanger entire communities. Accident always effect to organization reputation and economy of country. So this is primary responsibility to prevent all accidents including accident that occurs from electrical hazard.

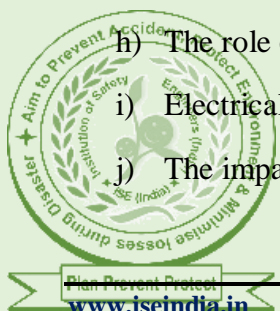
5. CONCLUSION

In conclusion, the study of risk control related to electricity is crucial for promoting safe and effective use of electrical energy in modern society. Electricity is a powerful and essential source of energy, but it can also pose significant risks to human life and property. Therefore, it is essential to identify, assess, and control potential hazards associated with the use and distribution of electrical energy. Effective risk control measures may include maintenance, inspection, testing, risk assessment, and emergency response planning. The hierarchy of controls is a framework for selecting the most effective control measures for protecting workers from hazards, starting with the most effective measure (elimination) and working down the list as needed.

By implementing appropriate risk control measures, individuals and organizations can ensure the safe use and distribution of electrical energy and minimize the risks associated with electrical hazards. Ultimately, the goal is to promote a safe and sustainable electrical energy infrastructure that supports the needs of society while protecting human life and property.

6. SUGGESTIONS

- a) The importance of electrical safety training for workers and employers
- b) Common electrical hazards and how to control them
- c) Electrical safety in the workplace: best practices and regulations
- d) Risk assessment and management in electrical systems
- e) Electrical maintenance and inspection best practices for preventing accidents
- f) Personal protective equipment for electrical workers
- g) Emergency response planning for electrical accidents
- h) The role of technology in improving electrical safety and risk control
- i) Electrical safety in the home: tips for homeowners and renters
- j) The impact of electrical accidents on society and the environment.





7. RECCOMMENDATION

- a) Hazard identification and risk assessment techniques for electrical systems
- b) Control measures for electrical hazards in the workplace
- c) Electrical safety training and education for workers and employers
- d) Best practices for electrical maintenance, inspection, and testing
- e) The importance of regular safety audits for electrical systems
- f) The role of personal protective equipment in electrical safety
- g) Emergency response planning for electrical accidents
- h) Electrical safety regulations and standards
- i) The impact of new technologies on electrical safety and risk control
- j) Case studies of electrical accidents and their causes, consequences, and prevention measures.
- k) Identify to electricity related risk from effective manner and take adequate safety measure as per existing risk.

REFERENCES

- Occupational Safety and Health Administration (OSHA) Electrical Safety Standards: <https://www.osha.gov/SLTC/electrical/>
- National Fire Protection Association (NFPA) Electrical Safety Standards: <https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/List-of-Codes-and-Standards/Detail?code=70E>
- Institute of Electrical and Electronics Engineers (IEEE) Electrical Safety Standards: <https://standards.ieee.org/standard/902-2020.html>
- Centers for Disease Control and Prevention (CDC) Electrical Safety Guidelines: <https://www.cdc.gov/niosh/topics/electrical/default.html>
- Electrical Safety Foundation International (ESFI) Electrical Safety Resources: <https://www.esfi.org/resources/>
- American Society of Safety Professionals (ASSP) Electrical Safety Standards and Resources: <https://www.assp.org/topics/electrical>
- Electrical Contractors' Association (ECA) Electrical Safety Guidance: <https://www.eca.co.uk/business-industry-support/safety-and-technical/electrical-safety-guidance>
- International Electrotechnical Commission (IEC) Electrical Safety Standards: <https://www.iec.ch/safety/>





- National Institute for Occupational Safety and Health (NIOSH) Electrical Safety Resources

<https://www.cdc.gov/niosh/topics/electrical/safety.html>

Plan Prevent Protect

- Occupational Safety and Health Administration (OSHA) Electrical Safety eTool:

https://www.osha.gov/SLTC/etools/electric_power/introduction.html

Plan Prevent Protect

International Journal Of Institution of Safety Engineers (India)





HOW TO CONTROL TO INDUSTRIAL ACCIDENT

Abdulmunam Al-Mehaif,

Health, Safety & Environment Cordinator - ARAMCO

Email id: mehaif@hotmail.com

ABSTRACT: This paper presents an overview of strategies that can be employed to control industrial accidents in the workplace. The focus is on identifying potential hazards and implementing measures to prevent and mitigate accidents. The paper discusses the importance of conducting regular risk assessments and implementing safety protocols to reduce the risk of accidents. Training and education programs are also highlighted as critical tools for raising awareness and ensuring that employees are prepared to respond to emergencies.

Additionally, the paper emphasizes the need for regular maintenance and inspection of equipment and facilities to prevent malfunctions and identify potential safety hazards. Creating a culture of safety in the workplace is also discussed as a way to promote safe behavior and encourage employees to take responsibility for their own safety and that of their colleagues.

Finally, the paper recommends the development and implementation of emergency response plans to ensure that everyone in the workplace knows what to do in the event of an accident or emergency. Overall, this paper provides practical guidance for controlling industrial accidents and creating a safe and productive workplace for all employees.

Keywords: Industrial Accidents, Accident Prevention, Workplace Safety, Risk Assessment, Risk Control, Hazard control, Safety management

1. INTRODUCTION

Industrial accidents can have severe consequences, including injury or loss of life, damage to equipment and facilities, and financial losses. As such, controlling and preventing industrial accidents is a critical concern for businesses and organizations across various industries. This paper provides an overview of strategies that can be employed to control industrial accidents in the workplace.

The paper begins by discussing the importance of conducting regular risk assessments to identify potential hazards and implementing safety protocols to reduce the risk of accidents. Training and





education programs are also highlighted as essential tools for raising awareness and ensuring that employees are prepared to respond to emergencies.

Additionally, the paper emphasizes the need for regular maintenance and inspection of equipment and facilities to prevent malfunctions and identify potential safety hazards. Creating a culture of safety in the workplace is also discussed as a way to promote safe behavior and encourage employees to take responsibility for their own safety and that of their colleagues.

Finally, the paper recommends the development and implementation of emergency response plans to ensure that everyone in the workplace knows what to do in the event of an accident or emergency.

Overall, this paper provides practical guidance for controlling industrial accidents and creating a safe and productive workplace for all employees. By implementing these strategies, organizations can reduce the risk of accidents and protect their employees, equipment, and facilities.

2. HOW CAN ACCIDENT BE CONTROLLED AT WORKPLACE

Accidents can be controlled in the workplace by implementing a combination of strategies that focus on identifying potential hazards and reducing the risk of accidents. The following are some key strategies for controlling accidents in the workplace:

- **Conduct regular risk assessments:** Conducting regular risk assessments can help identify potential hazards and risks in the workplace. This includes identifying hazardous materials, unsafe work practices, and equipment that may pose a risk to employees.
- **Implement safety protocols:** Once potential hazards are identified, safety protocols should be implemented to reduce the risk of accidents. This includes providing personal protective equipment (PPE), safety guards on equipment, and signage to alert employees to potential hazards.
- **Provide training and education:** Regular training and education programs should be provided to employees to ensure that they are aware of safety protocols and know how to respond in the event of an accident or emergency.
- **Conduct regular maintenance and inspection:** Regular maintenance and inspection of equipment and facilities can help prevent malfunctions and identify potential safety hazards before they become serious issues.
- **Foster a safety culture:** Creating a culture of safety in the workplace can help promote safe behavior and encourage employees to take responsibility for their own safety and that of their colleagues.





- **Develop and implement emergency response plans:** Having an emergency response plan in place can help ensure that everyone in the workplace knows what to do in the event of an accident or emergency.

By implementing these strategies, accidents can be controlled and prevented in the workplace, ensuring a safe and productive work environment for all employees.

3. HOW CAN INDUSTRIAL HAZARDS BE CONTROLLED?

Industrial hazards can be controlled through various methods, including:

- **Engineering controls:** These are modifications to equipment, processes, or facilities that aim to eliminate or reduce hazards. Examples include machine guards, ventilation systems, and automated safety devices.
- **Administrative controls:** These are policies, procedures, and training programs that aim to reduce hazards through changes to work practices or work organization. Examples include job rotation, safe work procedures, and training programs.
- **Personal protective equipment (PPE):** PPE is worn by workers to protect them from specific hazards, such as chemical exposure, noise, or physical impact. Examples of PPE include gloves, respirators, and hard hats.
- **Hazard communication:** Employers are required to communicate information about hazards to workers. This includes providing Material Safety Data Sheets (MSDS) for hazardous materials and warning labels on equipment or containers.
- **Emergency preparedness:** Employers must have emergency plans and procedures in place to respond to accidents, spills, or other hazardous incidents. These plans should be regularly reviewed and updated.
- **Regular inspection and maintenance:** Regular inspection and maintenance of equipment and facilities can identify potential hazards and allow for their timely repair or replacement.

By employing these methods, industrial hazards can be effectively controlled, minimizing the risk of accidents, injuries, and illnesses in the workplace. ¹**Elimination** such as eliminate or kill to potential source of harm or situation, ²**Substitution** such as substitute to Process or material or method of work, ³**Engineering Control** such as use of guard, remote sensing devices etc. ⁴**Administrative Control** such as training, Supervision, enforcement to rules & regulation & ⁵Use of **Personnel Protective equipment** is also known as hierarchy of hazard control. This method is most popular and use to control to industrial hazard and ensure safe work place to prevent any potential future harm.





4. CONCLUSION

In conclusion, controlling industrial accidents and hazards in the workplace is a critical concern for organizations across various industries. By implementing strategies such as regular risk assessments, safety protocols, training and education programs, maintenance and inspection, safety culture, and emergency response planning, organizations can effectively control and prevent accidents and hazards.

It is essential for employers to prioritize safety in the workplace and create a culture that values safety and encourages employees to take responsibility for their own safety and that of their colleagues. Through a combination of engineering and administrative controls, personal protective equipment, hazard communication, emergency preparedness, and regular inspection and maintenance, industrial hazards can be effectively controlled, ensuring a safe and productive workplace for all employees.

Overall, organizations that prioritize safety and take proactive steps to control and prevent accidents and hazards will benefit from improved productivity, reduced absenteeism and turnover, and a positive reputation among employees and stakeholders.

5. RECCOMENDATION

- ✓ Based on the strategies discussed in this paper for controlling industrial accidents and hazards in the workplace, the following recommendations are made:
- ✓ Conduct regular risk assessments and implement safety protocols to reduce the risk of accidents and hazards.
- ✓ Provide regular training and education programs to employees to ensure they are aware of safety protocols and know how to respond in the event of an accident or emergency.
- ✓ Regularly maintain and inspect equipment and facilities to prevent malfunctions and identify potential safety hazards before they become serious issues.
- ✓ Foster a safety culture in the workplace that promotes safe behavior and encourages employees to take responsibility for their own safety and that of their colleagues.
- ✓ Develop and implement emergency response plans to ensure everyone in the workplace knows what to do in the event of an accident or emergency.
- ✓ Regularly review and update safety policies and procedures to ensure they remain effective and relevant.
- ✓ Encourage employees to report safety concerns or hazards, and promptly address any reported concerns.
- ✓ By implementing these recommendations, organizations can effectively control industrial accidents and hazards in the workplace, ensuring a safe and productive work environment for all employees.





Proactive approach such as Hazard identification & Risk assessment, Job Safety Analysis, Safe Operating Procedure, Safety Management plan, Emergency preparedness plan etc are very helpful to control to industrial accident. This will be effective if prepare by well experiences and qualified personnels and ensure strictly compliance as per these documents on regular basis.

6. SUGGESTIONS

Based on the strategies and recommendations discussed in this paper, here are some additional suggestions for controlling industrial accidents and hazards in the workplace:

- Try to identify potential sources of accident & associated risk proactively & ensure effective Safety measure as per existing risk.
- Regularly review and update safety training and education programs to ensure they remain current and effective.
- Consider using technology, such as sensors or automated safety devices, to enhance safety in the workplace.
- Involve employees in the development and implementation of safety policies and procedures to increase their engagement and ownership.
- Conduct regular safety audits to evaluate the effectiveness of safety measures and identify areas for improvement.
- Ensure that all employees, including contractors and visitors, receive safety training and are aware of safety protocols in the workplace.
- Consider establishing a safety committee or team to oversee safety initiatives and promote a culture of safety in the workplace.
- Provide incentives for employees who consistently demonstrate safe behavior and adhere to safety protocols.
- By implementing these suggestions, organizations can further enhance their efforts to control industrial accidents and hazards in the workplace, promoting a safe and productive work environment for all employees.

REFERENCES

1. Occupational Safety and Health Administration (OSHA). (2021). Control and Prevention: Hazard Identification, Evaluation, and Control. Retrieved from <https://www.osha.gov/hazard-identification>





2. International Labour Organization (ILO). (2011). Safety and Health in the Use of Chemicals at Work. Retrieved from <https://www.ilo.org/global/topics/safety-and-health-at-work/areas-of-work/chemical-safety/lang--en/index.htm>
3. National Institute for Occupational Safety and Health (NIOSH). (2021). Workplace Safety and Health Topics: Control and Prevention. Retrieved from <https://www.cdc.gov/niosh/topics/control/>
4. United States Environmental Protection Agency (EPA). (2021). Hazardous Waste Management: Prevention and Control. Retrieved from <https://www.epa.gov/hw/learn-basics-hazardous-waste#Prevention>
5. Health and Safety Executive (HSE). (2021). Managing Risks in the Workplace. Retrieved from <https://www.hse.gov.uk/risk/managing.htm>
6. Safety Culture in Organization: A Review, Shamim Rayani, International Journal of Institution of Safety Engineers (India), Volume 3, Issue 1, Jan-March.20, Page 30-39
7. (2021). Workplace Safety and Health Topics: Hazard Control. Retrieved from <https://www.assp.org/resources/topics/hazard-control>
8. Pinto A, Nunes IL, Ribeiro R (2011) Occupational risk assessment in construction industry – Overview and reflection. Saf Sci 49, 614–24.





RNSN SERIATE (P) LIMITED

About Us: RNSN Seriate (P) Limited is private company limited by share. RNSN Seriate (P) Limited is Engineering, Procurement, Construction, Manpower supply & multi solution Engineering Company. RNSN Seriate (P) Limited is an ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 certified company. Corporate Identification No. (CIN) of RNSN Seriate (P) Limited is U93090CT2018PTC008917. RNSN Seriate (P) Limited also provides Consultancy, Chartered engineering, ISO Auditing & Certification Services.

RNSN Seriate (P) Limited vision is to deliver world class best services and Products to our customer as per their expectation.

Sustainability: For sustainable business, RNSN Seriate (P) limited is committed to fulfil Social, Economic & Environmental requirements and ensure compliance as per applicable law, norms & codes. RNSN Seriate (P) limited will take all necessary steps to achieve zero harm, save natural resources and protect to environment.



RNSN Seriate
RNSN SERIATE (P) LIMITED

Health, Safety & Environment (HSE) Policy

RNSN SERIATE (P) LIMITED is committed to ensure Safe healthy work environment to protect human being as well as Environment. In Order to achieve Health Safety & environment related objective, Policy is:

- Ensure compliance on based on relevant National, International Rules, Regulation, Norms & Codes
- To main high Safety Standard at workplace, we adopt best Safety Practices & Conduct Safety Program regularly.
- To Plan & effective implementation of Safety Health, Environment management system
- Being new organisation, always seek opportunities and Continual improvements in products, process, Services and Peoples to ensure compliance & standards.

RNSN Seriate (P) Limited takes all necessary steps to achieve zero harm & increase stakeholders satisfaction.

Date: 30/11/2018



Director



RNSN Seriate
RNSN SERIATE (P) LIMITED

Quality Policy

RNSN SERIATE (P) LIMITED is committed to Manufacture, Supply products, Provide Engineering & Consultancy Services conforming to customer's quality standards and meet their requirements on time through effective planned activity and continual improvements of products, process, Services & Peoples to ensure compliance as per relevant national and International Norms, Codes & Standard.

RNSN Seriate (P) Limited take all necessary step adopt standard practices to maintain quality of Products, services & increase stakeholders satisfaction

Date: 03/12/2018



Director

For any information/ query call +91-7509487141

Or mail Info@rnsnseriate.com

For more details visit www.rnsnseriate.com





WASTE MANAGEMENT SYSTEM

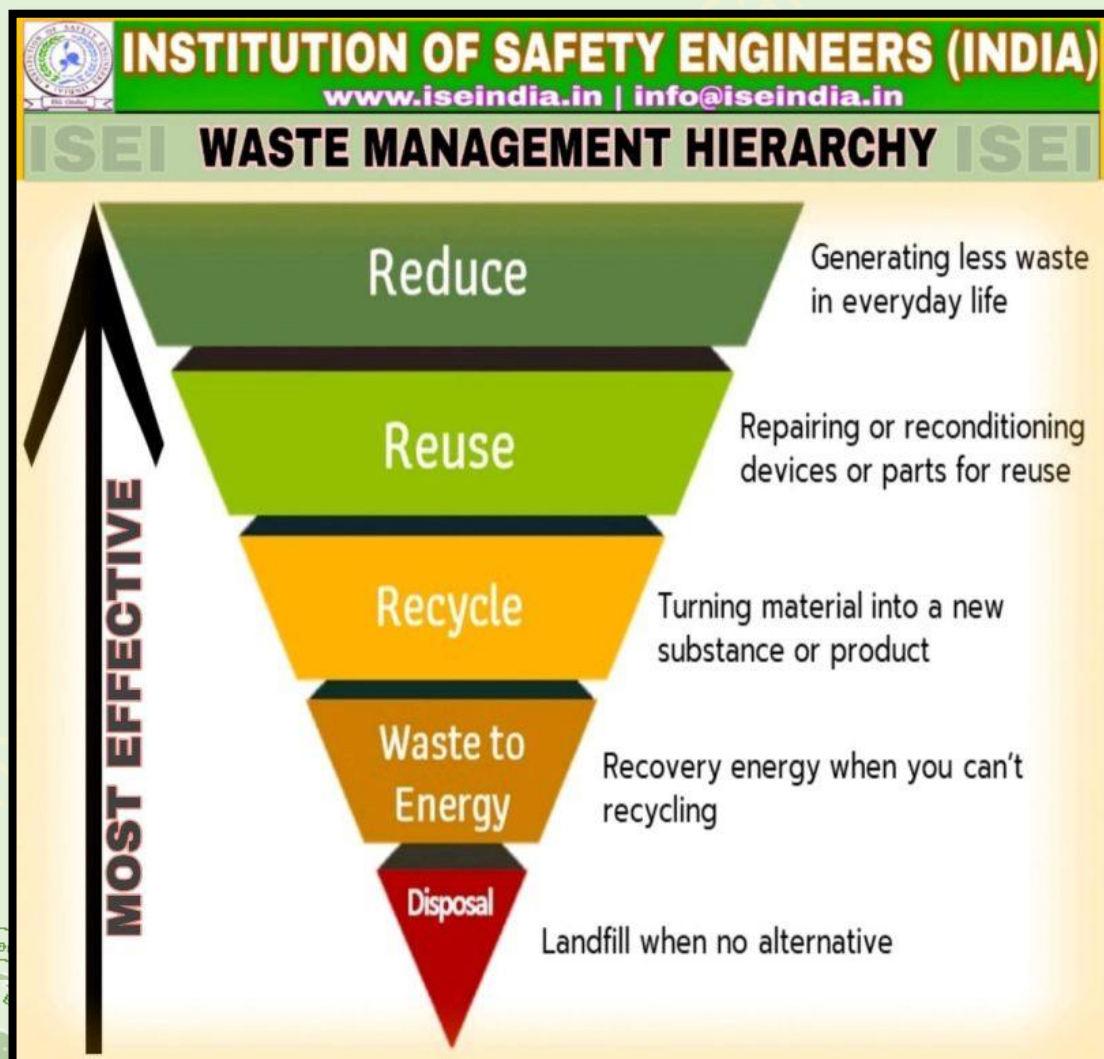
✓ A waste management system is the strategy an organization uses to dispose, reduce, reuse, and prevent waste to protect environment & ensure good hygiene

✓ Waste disposal methods may be recycling, composting, incineration, landfills, bioremediation, waste to energy, and waste minimization. Waste Management Life Cycle.

✓ Poor waste management contributes to climate change and air pollution, and directly affects many ecosystems and species

✓ municipal solid waste, industrial waste, agricultural waste, hazardous waste are few major categories of waste.

Waste Management Hierarchy: It gives top priority to waste prevention, followed by re-use, recycling, recovery and finally disposal. The hierarchy helps us identify effective method of waste management priorities wise.





CONTROLLING RISK RELATED TO ASBESTOS

Asbestos is a soft grey material that does not burn and is used to protect against heat.

- ✓ Asbestos is in thousands of products, including building products, Many household products
- ✓ Exposure of asbestos can cause several health issue, especially lung diseases.
- ✓ Inhalation of asbestos fibres can cause cancers such as mesothelioma and lung cancer, & other serious lung diseases such as asbestosis and pleural thickening.
- ✓ Inhalation is the most important route of exposure & Ingestion is a less common exposure pathway
- ✓ Occupations that have a high risk of asbestos exposure include: Shipbuilding and naval service, Railway construction, Asbestos mining and milling, Construction and building trades, Manufacture of chemicals, flooring, plastics or rubber, Auto industry, Firefighting, Fabric milling, Building demolition etc.
- ✓ Risk factor related to asbestos fibres depend on Duration, Intensity, Type of industry, Personal risk factors including HC, Genetic mutations etc

Safety Control Measure

- ✓ Carry out Hazard identification & Risk Assessment (HIRA) and take adequate safety measure as per existing risk to minimise risk upto ALARP
- ✓ Identify to the designated work area by barricades, fences, or similar means.
- ✓ Ensure that windows, doorways and all other openings are adequately sealed or secured to prevent the release of asbestos fibre into other work areas.
- ✓ Display adequate signage to indicate asbestos work is in progress, the hazards, and the precautions required.
- ✓ Unauthorised person must be restricted in asbestos work area
- ✓ Use adequate PPE's as per level of risk within the designated work area.
- ✓ Don't eat, drink, chew or smoke within any work area containing asbestos.
- ✓ Drop sheets and barriers used in the work area should be wet-wiped or vacuumed with a HEPA-filtered vacuum.
- ✓ Barriers and portable enclosures should not be reused unless they are rigid and can be thoroughly cleaned.





☑ Compressed air must not be used to clean up and remove dust from any surface.

☑ Clean the work area frequently and at regular intervals during the work and immediately on completion of the work.

☑ Dust and waste should be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container.

☑ Before leaving the work area, you must decontaminate their protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing.

☑ Workers must wash their hands and face before leaving the work area. The employer must provide adequate wash facilities.

☑ Medical examinations and clinical tests must be carry out at regular interval.

☑ Conduct Training and other Program for awareness to control asbestos particles related risk

INSTITUTION OF SAFETY ENGINEERS (INDIA)
इंस्टीट्यूशन ऑफ सेफ्टी इंजीनियर्स (इंडिया)

Asbestos in the Workplace

These naturally occurring fibrous minerals are found throughout the world, including Canada. Because it has heat-resistant and insulating properties, asbestos was used in a wide range of manufactured products such as structural fireproofing and insulation, cement, plaster, and textiles.

Health risks

Workers who inhale asbestos fibres, particularly over long periods of time, are at risk of:

- Asbestosis** scarring of lung tissue, making it difficult to breathe
- Lung cancer** smoking can greatly increase the risk
- Mesothelioma** cancer of the chest lining or abdominal cavity

Asbestos exposure occurs when the fibres are airborne. Asbestos can be encapsulated and, therefore, the risk of exposure becomes low. Precautions are necessary when renovating, demolishing, removing, sanding, or doing similar activities.

Workers at risk include:

- Carpenters
- Cabinetmakers
- Construction trade persons
- Electricians
- Plumbers and pipefitters
- Plaster and drywall installers
- Sheet metal workers
- Auto mechanics
- Shipbuilders
- Custodial workers

Controlling asbestos

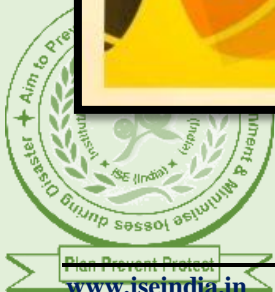
When asbestos is present, a control program to protect workers from exposure must be in place that addresses:

- containment of asbestos and asbestos operations
- controlling the release of asbestos fibres and hygiene practices
- engineering controls, work practices, and hygiene practices
- providing workers with task-specific work instructions that address both the hazards and the controls
- providing, using and maintaining personal protective equipment and clothing
- the methods and procedures needed to monitor the concentration of airborne asbestos
- the methods needed to decontaminate worker's clothes etc.
- the removal and clean-up of asbestos waste and related material

Asbestos

Many Countries Prohibit to sell, use & manufacture to Asbestos. Each Year several People killed, several suffer from health diseases due to exposure of asbestos particles or dust. Asbestos related risk can be control through effective safety measure.

ISEI
www.iseindia.in | info@iseindia.in





HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM

- ✓ A Health, Safety, and Environment (HSE) management system is a comprehensive framework used by organizations in preventing, mitigating, and eliminating disruptions and losses caused by workplace accidents, risk and hazard exposures, and environmental phenomena.
- ✓ The objective of a HSE Management System is to provide a structured management approach in any organisation to control safety risks.
- ✓ The key elements of Health, Safety & Environment Mgt. System are: HSE Policy, Organizing, Planning and implementation, Evaluation, Auditing, Action for improvement & Continual improvement
- ✓ Effective health, safety & Environmental management system help minimise risk and protect against accidents in the workplace.





8th TRAINING CALENDAR

TRAINING CALENDAR (JAN-MARCH 2023)				
Training Title/ Course	Duration	Schedule	Location	Remarks
Lead Auditor ISO 14001:2015	5 Day	02/01/23 To 06/01/23	Raipur	Virtual/ Regular Mode
ISE- ICCOHSEM (International Certificate course in Occupational Health Safety & Env. Mgt.)	Min. 96 hours Training	09/01/23 To 20/01/23	Raipur	E-Learning/ Regular Mode Exam date 22/01/2023
ISE-TQM(Total Quality Management)	3 Day or Min.24 hours Training	21/01/23 To 24/01/23	Raipur	Virtual/ Regular Mode
First Aid & CPR	1 Days	25/01/2023	Raipur	Regular/ Class Room
ISE-SM (Safety Management at work place)	3 day or Min.24 hours Training	28/01/23 To 31/01/23	Raipur	Virtual/ Regular Mode
Lead Auditor ISO 45001:2018	5 Day	01/02/23 To 06/02/23	Raipur	Virtual/ Regular Mode
ISE-EM (Environmental Management)	3 Day or Min.24 hours Training	07/02/23 To 09/02/23	Raipur	Virtual/ Regular Mode
ISE-FSM (Fire Safety management in any organization)	3 Day or Min.24 hours Training	10/02/23 To 13/02/23	Raipur	Regular/ Class room
Integrated Lead Auditor (ISO 45001:2018, ISO 9001:2015, ISO 14001:2015)	10 Days	15/02/23 To 25/02/23	Raipur	Virtual/ Regular Mode
First Aid & CPR	1 Days	27/02/2023	Raipur	Regular/ Class Room
Lead Auditor ISO 9001:2015	5 Day	28/02/23 To 04/03/23	Raipur	Virtual/ Regular Mode
ISE-RM (Rescue Operation in any organization)	2 Week	08/03/23 To 21/03/23	Raipur	Regular Mode
First Aid & CPR	1 Days	23/03/2023	Raipur	Regular/ Class Room
ISE- IDOHSEM (International Diploma in Occupational Health Safety & Env. Mgt.)	One year	Last Date of Registration 31/01/2023	Raipur	E-Learning/ Regular Mode, Exam Date Dec. 2023 (Proposed)
Diploma/ Post Diploma in industrial Safety/Industrial Safety & Fire/ FireSafety/Environmental Management/ Industrial Rescue Operation & Management / Disaster Management	One year	Jan– Dec. (2022-23 W)	Raipur	Regular
Certificate Course in Industrial Safety, Industrial Safety & Fire, Industrial Rescue Operation & Management, Fire Safety & Security Management, Disaster Management, Environmental Management, Quality Management, Fire Safety Management	3 Month	January-March 2023	Raipur	Regular/ Class room

Risk assessment & Control, Behaviour based safety, chemical safety in industries, Safety in construction industries, Scaffolding safety, Petroleum & Gas industries safety, Ergonomics, Mock





Drill, HAZOP study, Emergency planning, Disaster Mgt., Fire Safety, Hoisting & Rigging Safety,

Defensive Driving, Environmental Mgt., EIA, Rescue Operation, Live Saving Procedure, WAH,

Confined Space work Safety etc short Term Training also conducted by ISEI time to time.

Three Month Certificate Training course also Conducted by ISEI in Field of Rescue Operation & Management (Organisation), Industrial Safety, Industrial Safety & Fire, Disaster Management, Environmental Management, Quality Management, Fire Safety Management, Environmental Management, Safety Management in Chemical Industries, Safety Management in Construction Industries, Security Management, Occupational Health Safety (OHS), Occupation Health & Industrial Hygiene (OHIH), Scaffolding Inspector Training and Safety, Health, Environmental Management.

Interested Candidate can download application through given link, fill and send on email info@iseindia.in or Through Post on Institution Address with all supporting documents Application form for Admission

Note: Diploma & ISE-IDOHSEM Courses conducted twice in a year. December-January session known as winter session and June-July session is known as summer session.

For more details visit www.iseindia.in or mail info@iseindia.in Call +91-8720831773



WORK SAFER, SAVE NATURE

For more details visit www.iseindia.in or mail info@iseindia.in Call +91-6266474225, +91-8720831773

