इंस्टीट्यूशन ऑफ सेफ्टी इंजीनियर्स (इंडिया)
INSTITUTION OF SAFETY ENGINEERS (INDIA)
(Formerly Run Under ZJEW Trust & Regd. Under Section 8 of Companies Act 2013 MCA & Govt. of India)
"AIM TO PREVENT ACCIDENT, PROTECT ENVIRONMENT & MINIMISE LOSSES DURING DISASTER"

Webinar on 'OUR AIM - ZERO HARM'

Conducted by

Institution of Safety Engineers (India)

www.iseindia.in

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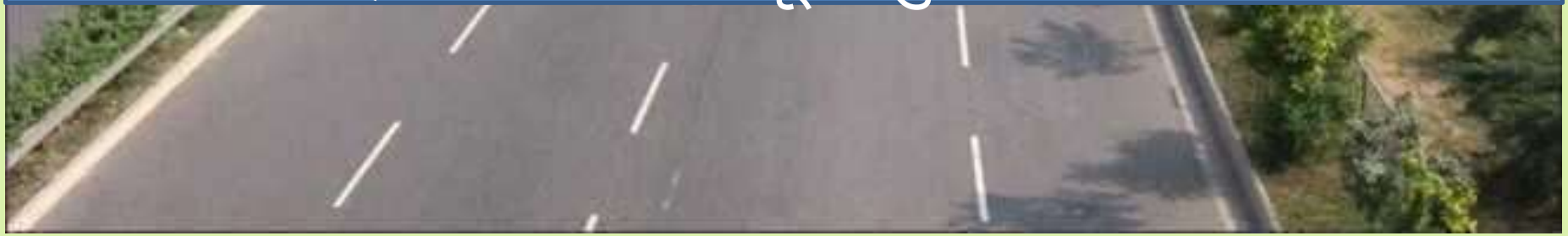
WELCOME

IN WEBINAR ON

"OUR AIM - ZERO HARM"

"हमारा लक्ष्य – शून्य नुकसान"



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INSTITUTION OF SAFETY ENGINEERS (INDIA)

इंस्टीट्यूशन ऑफ सेफ्टी इंजीनियर्स (इंडिया)

WORK SAFER AND SAVE NATURE

"AIM TO PREVENT ACCIDENT, PROTECT ENVIRONMENT & MINIMISE LOSSES DURING DISASTER"

WEBINAR ON "OUR AIM - ZERO HARM" ON THE OCCASION OF NATIONAL SAFETY WEEK 2023

5th March 2023, Sunday

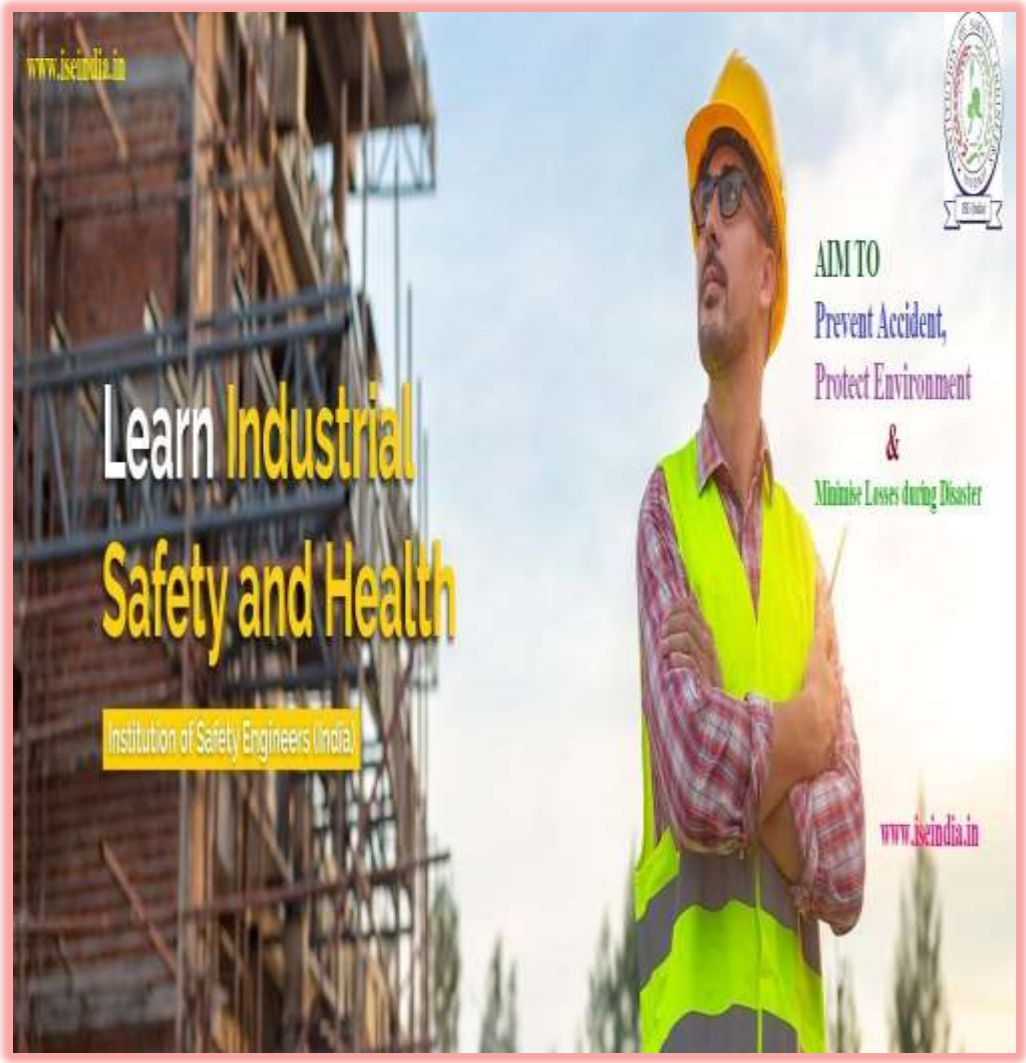
04:00 PM to 05:00 PM

REGISTRATION LINK IS IN BIO

FREE WEBINAR BY EXPERT

Registration: Free || E-CERTIFICATE FOR ALL PARTICIPANTS

Link: https://docs.google.com/forms/d/e/1FAIpQLSd26MSflft9rnCkts9FI743A52SUqzFwTd36boolZ3bkrYilA/viewform?usp=share_link



About us

Institution of Safety Engineers (India) is Non - Profitable organization set up in year 2012 under ZJEW Trust, Govt. Reg. No. 5240 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.

MEMBERSHIP SERVICES

SAFETY HEALTH ENVIRONMENT RELATED TRAINING & SERVICES

JOURNAL PUBLICATION

OUR SPEAKER

Narendra Dewangan :

M.E. (P.E), Post Diploma (Industrial Safety), Graduate in Mechanical Engineering with 15+ Yr Experience in field of EHS

Pooja: Coordinator Institution of Safety Engineers (India)

1. • **Lesson 1**
   • Objective of National Safety Week
2. • **Lesson 2**
   • History of National Safety Week
3. • **Lesson 3**
   • Statistics Record
4. • **Lesson 4**
   • Cost of accident
5. • **Lesson 5**
   • Major Factors of Accidents.
6. • **Lesson 6**
   • Classification of Hazard
7. • **Lesson 7**
   • Hazard Control method
8. • **Lesson 8**
   • Safety Management System
9. • **Lesson 9**
   • Point To be Remember
10. • **Lesson 10**
    • Question & Answer

Topics for discussion

Objective of "NSW" Celebration

- The objective of the National Safety day/week is to renew the commitment of employees and the general public to work safely and ensure the integration of a safe and sound work culture and lifestyle.
- To aware the people about to prevent industrial accidents.
- To aware the people about to prevent road accidents.
- To aware to society people to ensure safety of environment
- To implement the effective preventative measures to control organizational risk or such risk that results accident
- Know about history of NSC & Learn to Basic Safety

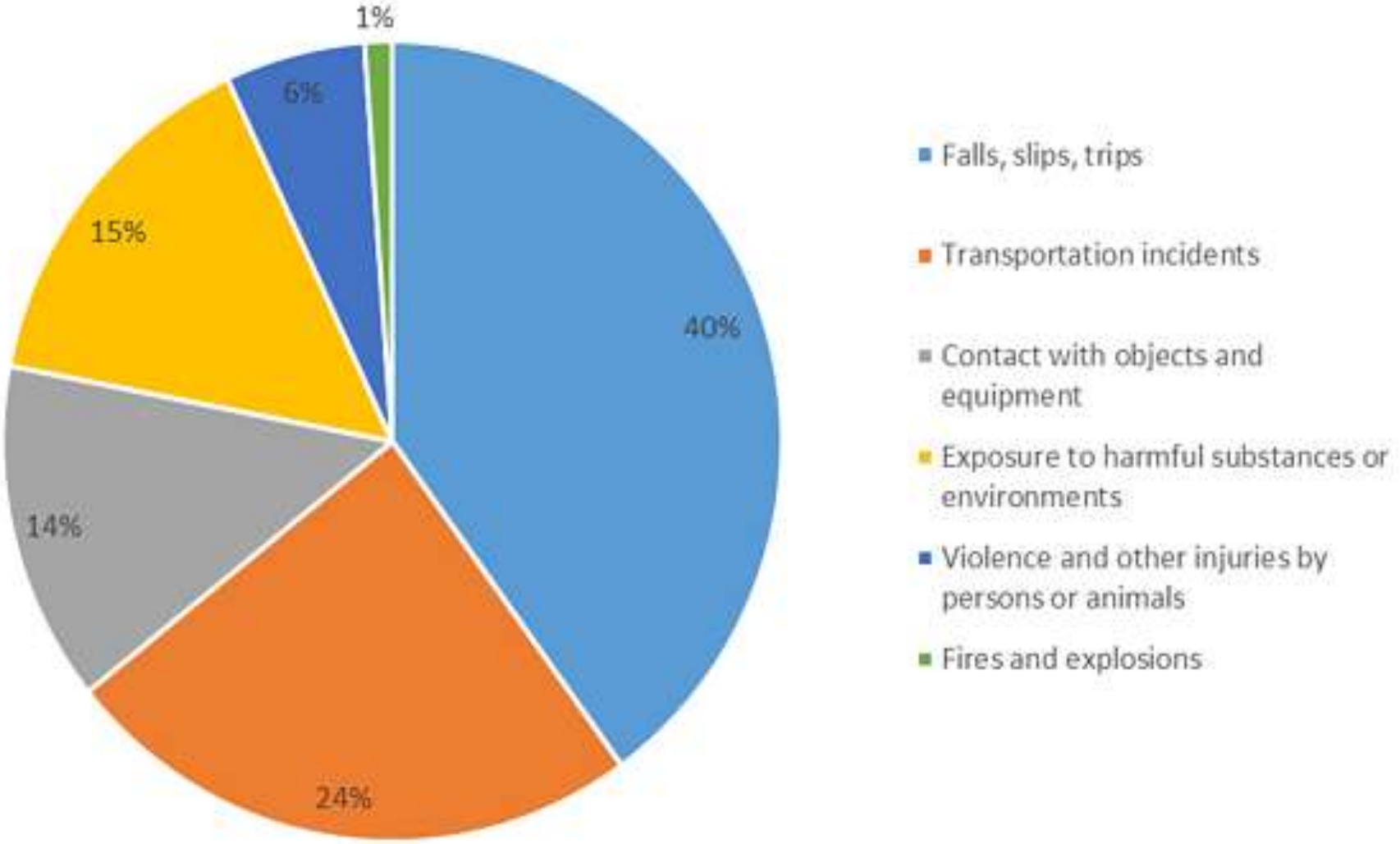
HISTORY OF NATIONAL SAFETY WEEK

- National Safety Day was observed for the first time in 1972, on the foundation day of the National Safety Council.
- National Safety Council is a non-profit, self-financing and tripartite apex body at the national level. It was set up by the Government of India, Ministry of Labour and Employment on 4 March 1965 to generate and develop a voluntary movement on Safety, Health, and Environment.
- NSC is an autonomous body.
- The campaign started as a single-day celebration on 4 March and spread over a week (National Safety week) from March 4-10.

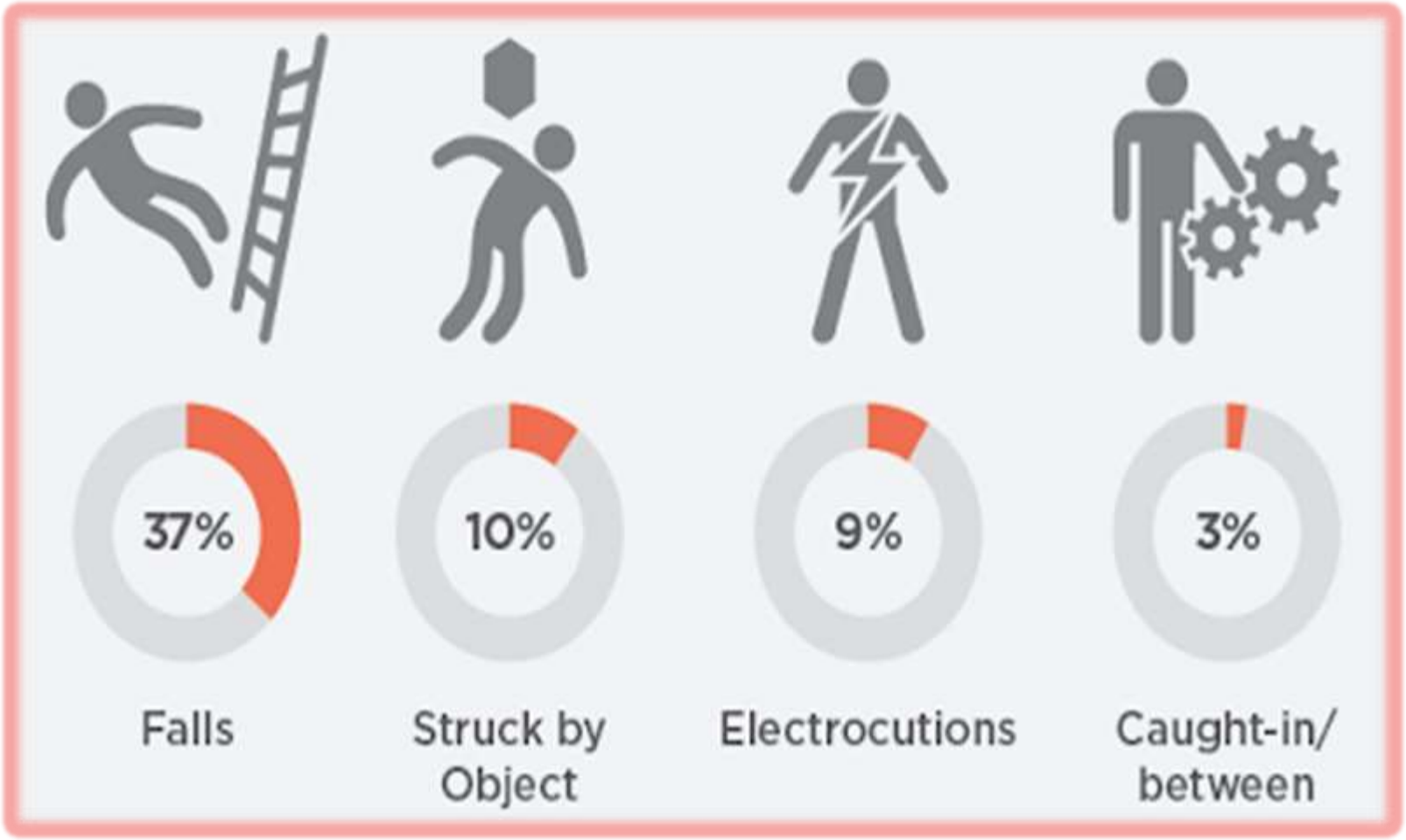
INTRODUCTION

- Industries playing vital role to growth country in Term of Economy, create employment opportunities.
- Industries has positive and Negative impacts. Positive impacts is good for country development and it create employment opportunities. Negative impacts is injury, Death of person and damage of environment and this harmful for any country.
- Each and every year several accident occur in industries due to ineffective safety management system. Effective safety management system always help to create safe healthy work environment.
- "Our Aim, Zero Harm"

CONSTRUCTION WORKERS FATALITY BY EVENT OR EXPOSURE



CONSTRUCTION FATAL FOUR



OSHA, USA in year 2013

INDUSTRIAL ACCIDENT 2014-2017

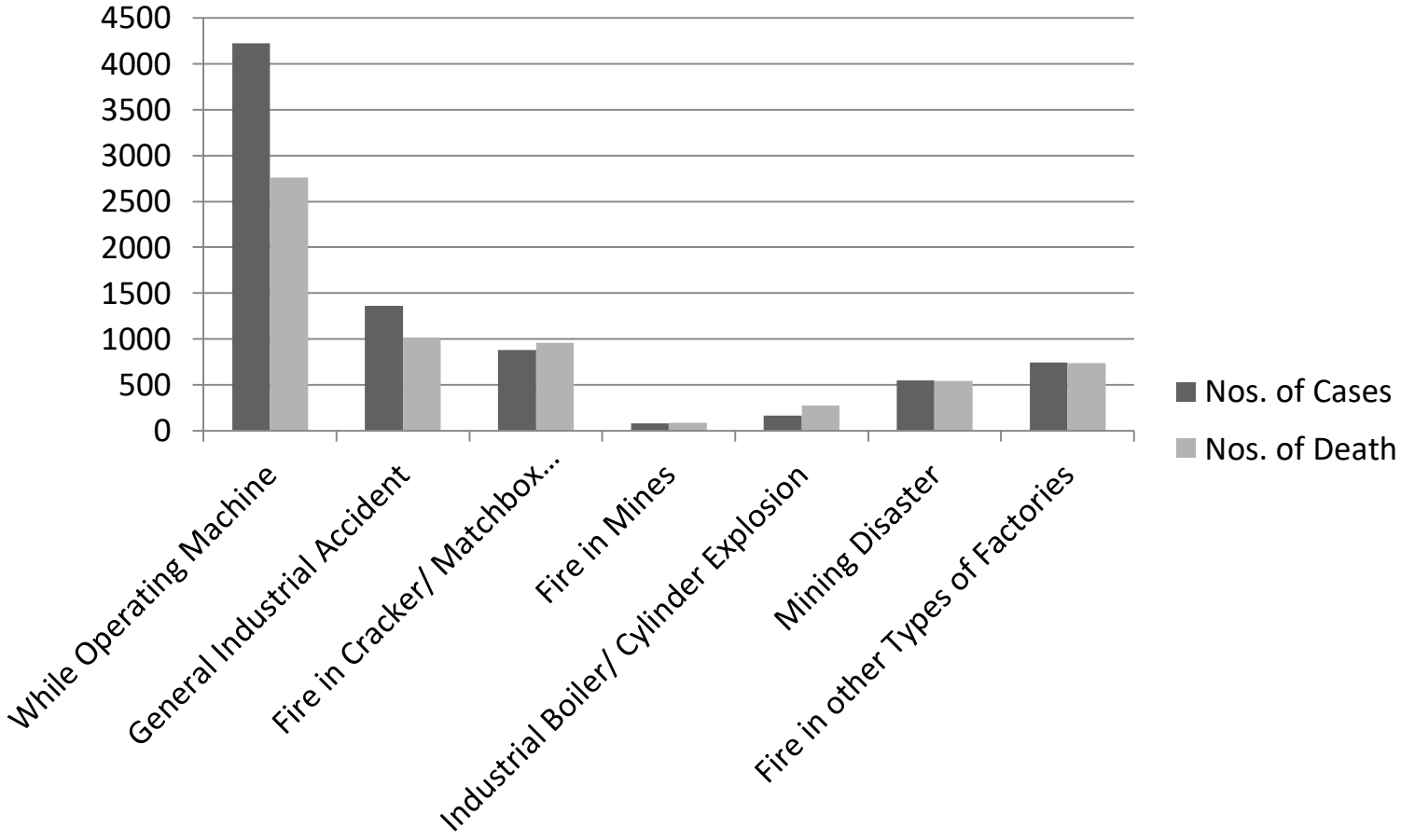


Table II, Disasters with a non-natural trigger from 1969 to 1993: Number of events over 25 years

Description	Africa	America	Asia	Europe	Oceania	Total
Accident	213	321	676	274	18	1,502
Technological accident	24	97	97	88	4	310
Fire	37	115	236	166	29	583

Table III. Disasters with a non-natural trigger: Number by global region and type in 1994

Description	Africa	America	Asia	Europe	Oceania	Total
Accident	8	12	25	23	2	70
Technological accident	1	5	7	7	0	20
Fire	0	5	5	9	2	21

Table IV. Examples of industrial explosions

Chemical involved	Consequences		Place and date
	Death	Injuries	
Dimethyl Ether	245	3,800	Ludwigshafen, Federal Republic of Germany, 1948
Kerosene	32	16	Bitburg, Federal Republic of Germany, 1948
Isobutane	7	13	Lake Charles, Louisiana, United States, 1967
Oil slops	2	85	Pernis, Netherlands, 1968
Propylene	–	230	East Saint Louis, Illinois, United States, 1972
Propane	7	152	Decatur, Illinois, United States, 1974
Cyclohexane	28	89	Flixborough, United Kingdom, 1974
Propylene	14	107	Beek, Netherlands, 1975

Adapted from ILO 1988.

Table V. Examples of major fires

Chemical involved	Consequences		Place and date
	Death	Injuries	
Methane	136	77	Cleveland, Ohio, United States, 1944
Liquefied petroleum gas	18	90	Ferzyn, France, 1966
Liquefied natural gas	40	–	Staten Island, New York, United States, 1973
Methane	52	–	Santa Cruz, Mexico, 1978
Liquefied petroleum gas	650	2,500	Mexico City, Mexico, 1985

Table VI. Examples of major Toxic Releases

Chemical involved	Consequences		Place and date
	Death	Injuries	
Phosgene	10	–	Poza Rica, Mexico, 1950
Chlorine	7	–	Wilsum, Federal Republic of Germany, 1952
Dioxin/TCDD (2,3,7,8-tetrachlorodibenzo-p-dioxin)	–	193	Seveso, Italy, 1976
Ammonia	30	25	Cartagena, Colombia, 1977
Sulphur dioxide	–	100	Baltimore, Maryland, United States, 1978
Hydrogen sulphide	8	29	Chicago, Illinois, United States, 1978
Methyl isocyanate	2,500	200,000	Bhopal, India, 1984

PRINCIPLE OF SAFETY MANAGEMENT

Safety management begins with incident management.

Safety Management is major parameter of industries business to control work place risk and results of business success.

Causes of Accident in Industries are basically Human & Mechanical Failure.

88% Accident occurs at industries due to unsafe Act, 10% Unsafe condition & 2% Natural causes as per Domino Theory

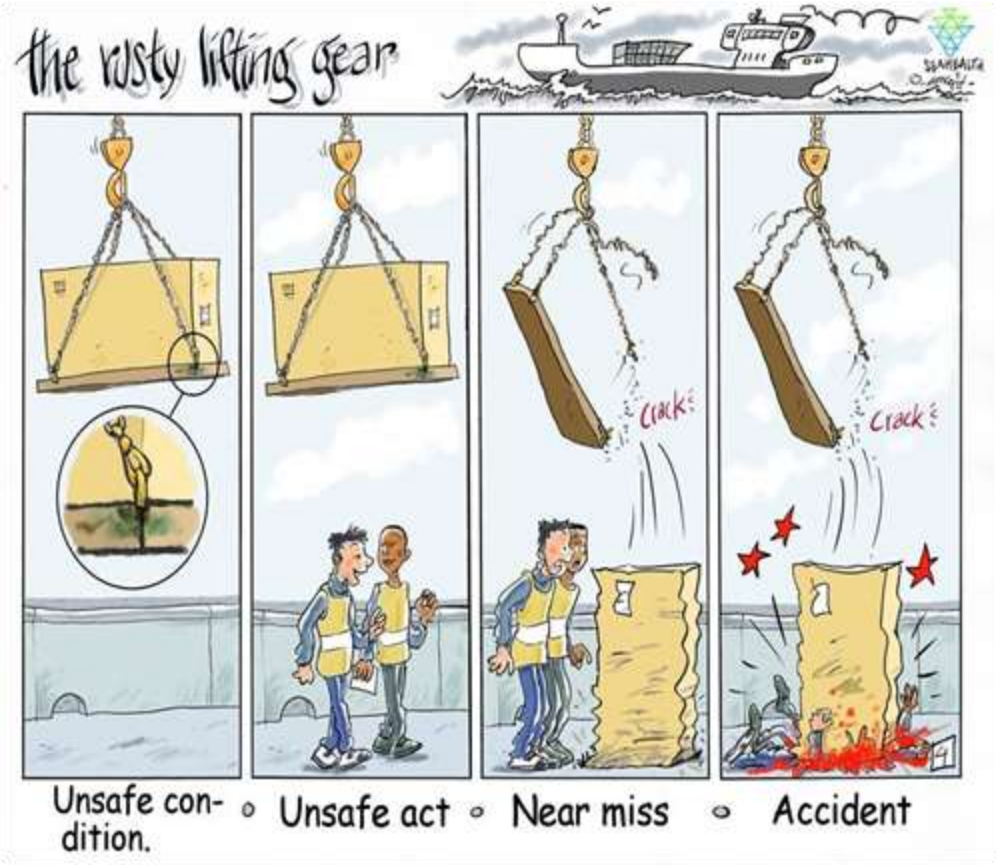
Risk related to industries can be minimised or control up to Tolerable level to take adequate Safety Control measure or Hazard control method.

Accident in a industries can be prevented to Eliminate work place Hazard & Prevent unsafe practices

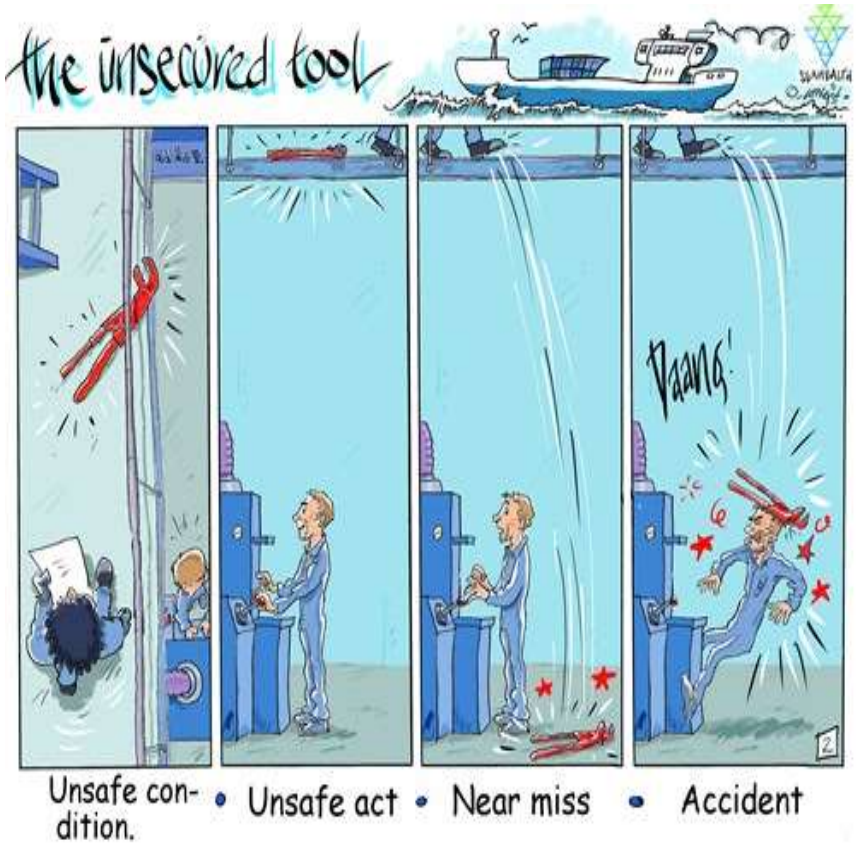
CAUSES OF ACCIDENT

<u>Unsafe Act & unsafe Condition</u> are basic cause of any Accident . When both conjugate at one point accident happened.

In other words, <u>Human and mechanical failure</u> are caused of accident.



CHAIN OF EVENTS



- Lack of Control
- Unsafe Acts
- Unsafe Conditions
- Accident
- Consequences

COST OF ACCIDENT

Costs of Accident are two types, Direct Cost & Indirect Cost. Indirect Cost is several Times more than Direct Cost.

Direct Costs:

- Fines in the criminal courts.
- First- aid or medical cost.
- Workers sick pay.
- Overtime to make up for the lost time.
- Lost production time whilst dealing with the injury.
- Compensation payable to the victim.
- Increase in insurance premium and indemnity payment.

Indirect cost:

- Loss of staff morale in the organization.
- Damage to public image and business reputation.
- Cost of recruiting and training temporary or replacement of labour.
- Cost of remedial action following an investigation.
- General difficulties in recruiting and retaining staff.
- Compliance with any enforcement notice served.

POTENTIAL SOURCES OR SITUATION OF HARM (HAZARD) THAT RESULTS ACCIDENT

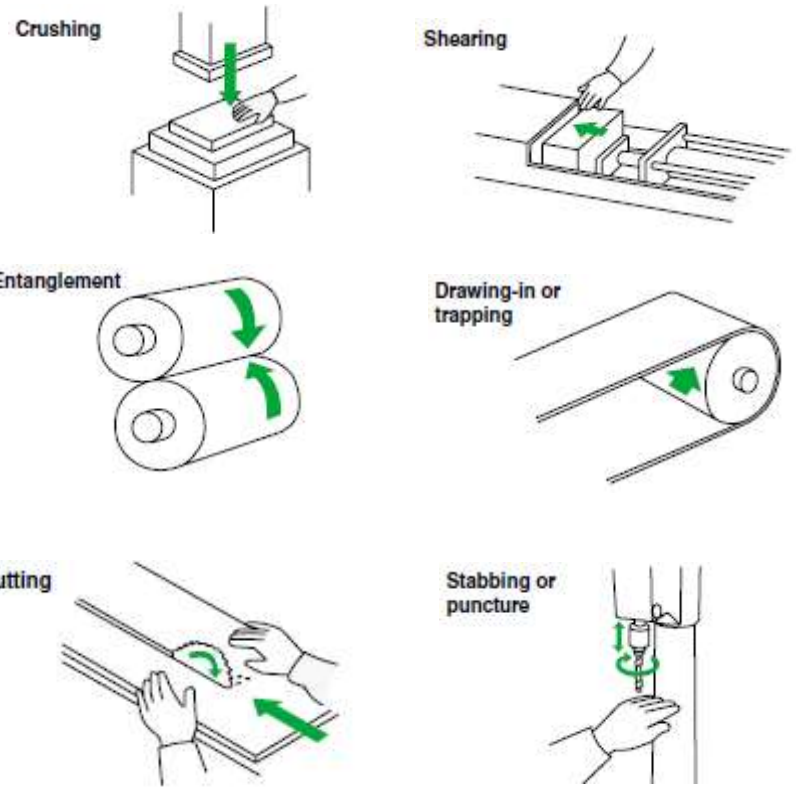
- **Fall of Person** : Due to poor workmanship, loss of balance, uneven surface, floor opening, poor work platform, working at height without using full body harness, Defective ladder or stair, slippery floor, Loose material in assess etc. Slip & Trip hazard also comes under Fall hazard
- **Fall of Materials**: Due to failure of lifting appliances, Tools & tackles, Loose material Keeping at edge on height or near floor opening, Poor method of Material lifting & shifting etc.

CLASSIFICATION OF HAZARD

MECHANICAL HAZARD:

Entanglement, Crushing, Shearing, Cutting, Drawing-in or trapping, Impact, Friction or abrasion, Stabbing or puncture etc. are few example of mechanical hazards.

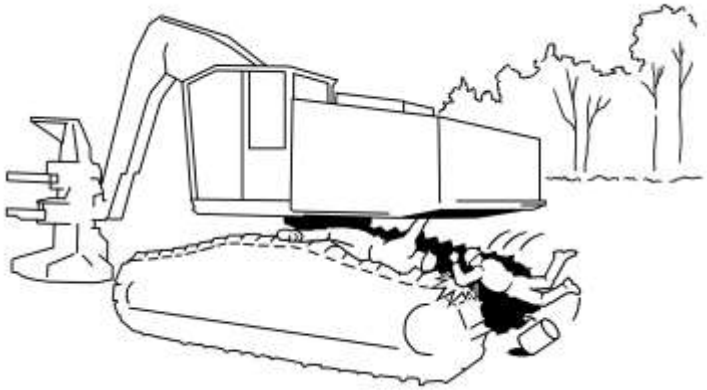
MECHANICAL HAZARD



CLASSIFICATION OF HAZARD

VEHICLE & EARTH MOVING EQUIPMENTS RELATED HAZARD:

Vehicle movement may cause of hit to person, Hit to object or Collision or topples etc.



CLASSIFICATION OF HAZARD

FIRE HAZARD

Such as Flammable storage near heat sources, Cooking or any sources that have potential to cause of fire and fire accident results loss of lives and property






CLASSIFICATION OF HAZARD

ELECTRICAL HAZARD

Such as Defective electrical Tools, Damage power cable, Use of Non-standard hand tools during electrical work, Static electricity, over load electrical equipment may cause of Electrocution, Fire, Burn injury, eye flash, Fall due to electrical shock.

Physical Hazard: Such as Heat, Cold, Poor illumination etc. Heat may cause of heat stress, Cold may cause of cold stress, Poor illumination results eye strain or resulted any unsafe act

Vibration

Noise

Low Temp.

High Temp.

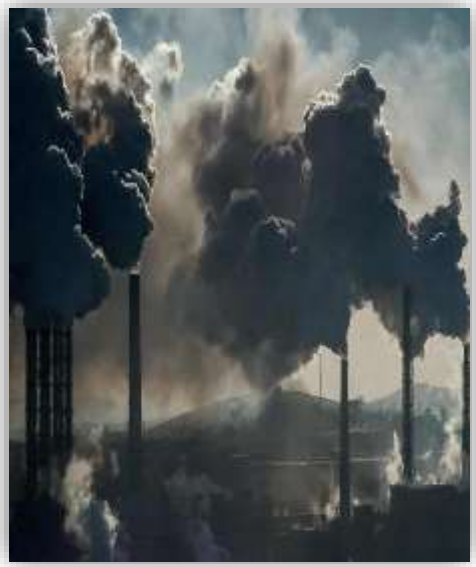
CHEMICAL HAZARD

like dust, fumes, gases effect to central nervous system problem & respiratory problem due to inhalation and create skin problem when come in its contact.

ENVIRONMENTAL HAZARD:

Such Potential Sources of harm that effect to environment and human being such as dust, fumes, Gases, NOx, SOx, Noise etc. Noise is also comes under physical hazard.

ENVIRONMENTAL HAZARD



CLASSIFICATION OF HAZARD

Biological hazard includes Bacteria, Viruses, Mold and Fungi, Blood and Body Fluids that found at construction site during catering operation facility or Occupational health center facility area may exposed to personnel through inhalation, ingestion, injection or contact with skin.

Radiation hazard may be Ionizing radiation and non-ionising radiation. X-ray, Gama ray are example of Ionizing radiation and ultraviolet (UV), lasers, radiofrequency etc are example of Non-ionizing radiation, found at site of construction industries.

HAZARD DUE TO NOT FULLFILLING ERGONOMICAL FACTOR includes repetitive movement, manual handling, workplace/job/task design, uncomfortable workstation and poor body positioning. Therefore several types of Hazard found at construction at workplace of construction site.

ERGONOMICAL REALED HAZARD

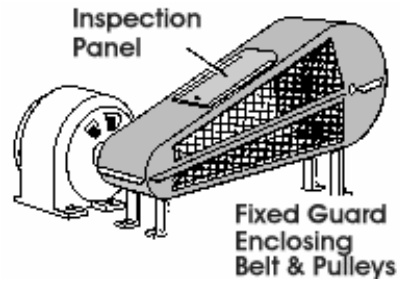
Eliminate

Substitute

Engineering Control

Administrative Control

Personnel Protective Equipments



Ref. ISO 45001:2018

HAZARD CONTROL METHOD

E I S E A P

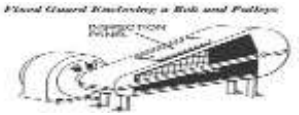
Most effective

Eliminate — Kill to hazard, cover hazard, — Eliminate to hazard

Isolate — Put up temporary barrier

Substitute — Use other route, other material — Substitute to process or method

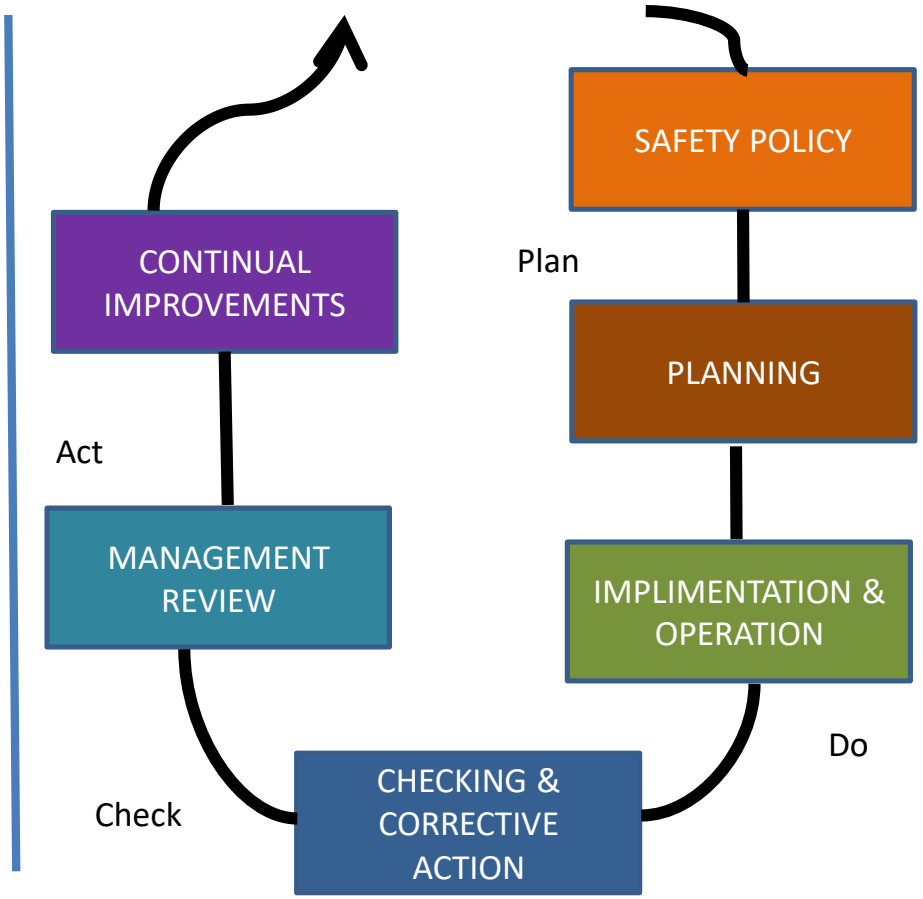
Engineering — Construct Wall, Guard



Administrative — put up notice, job rotation — Training, Enforcement of rules, Supervision

PPE — Safety helmet, Safety Shoes, gloves, respirator

ELEMENT OF SAFETY MANAGENT SYSTEM



CASE STUDIES

CASE STUDY

Bhopal Gas Tragedy,

Summary

Cause: Leak of Methyl isocyanate (MIC)

Start date: Mid Night of 2nd Dec. 1984
End date: 3 December 1984

Plant Name: Union Carbide India Limited (UCIL) pesticide plant in **Bhopal**, Madhya Pradesh, India.

Results (Bad consequence): Over 500,000 people were exposed to methyl isocyanate (MIC) **gas and Thousand of People dead**.

Controlling risk

ISEI Method

I **Identify** the potential sources of harm

S **See** likelihood of event occurring & their Potential impacts

E Evaluate Risk (on Based on potential Likelihood & hazardous event Occurring)

I Identify Action Plan & See for their implementation

REMEMBER

Always Follow Safety Rules

Identify hazard, access risk & Take adequate measure to mitigate to risk before starting any work

Always Follow to Traffic Safety Rules

Always use standard and suitable equipment's, Tools & Tackles

Keep yourself and others safe by practising good Safety habits.

INSTITUTION OF SAFETY ENGINEERS (INDIA)

OUR AIM-ZERO HARM'

"हमारा लक्ष्य – शून्य नुकसान"

Any question

THANK YOU!

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