

The Cost of an
Accident

Why safety is needed in construction ?

&

Why we are talking about to spread the construction safety awareness ?

Because it cost more as we realize

➤ Moral Responsibility

- Prevent suffering and maintain quality of life
- No-one should be expected to risk life and limb in return for a contract of employment

➤ Legal Responsibility

The Building & Other Construction Workers Act 1996

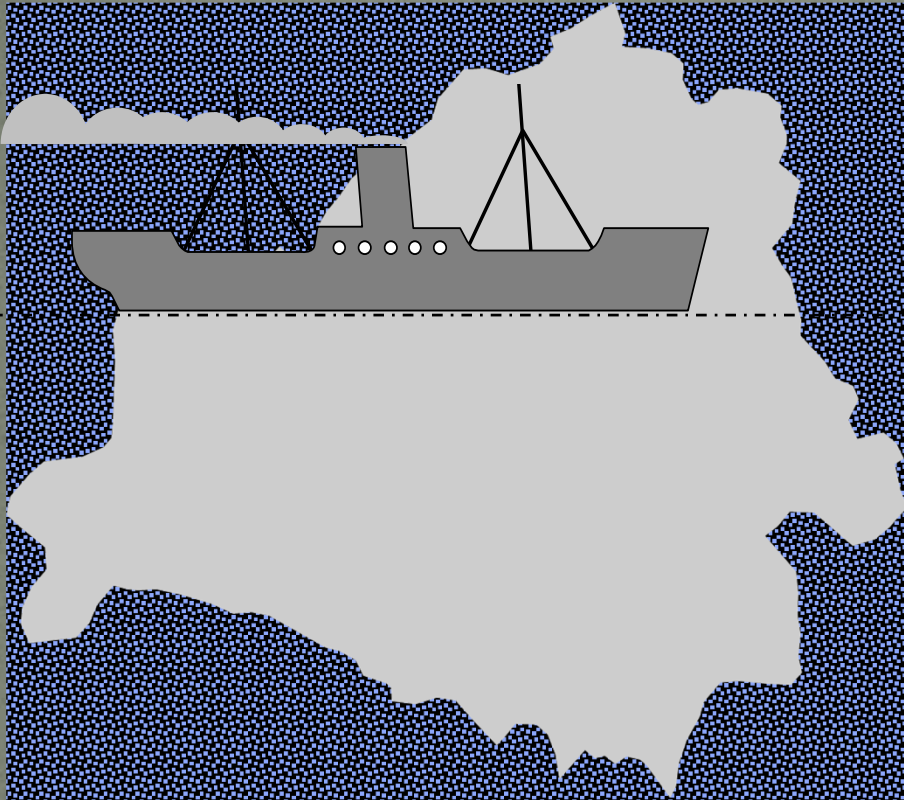
Failures can lead to:

- Enforcement notices
- Prosecution
- Civil actions for compensation

➤ Economical Responsibility

- Direct and Indirect loss

COST OF ACCIDENTS



Direct
Costs

Indirect
Costs

*Like This Iceberg, Hidden
Costs Of Accidents Are Not
Visible On The Surface, But
Are there.*

Accidents are more expensive than most people realize because of the hidden costs.

Direct Cost

Definite and known costs

- Worker's compensation premium
- Medical cost and indemnity cost

Indirect Cost

Costs to train and compensate a replacement worker, repair damaged property, investigate the accident and implement corrective action, and to maintain insurance coverage. Even less apparent are the costs related to schedule delays, added administrative time, lower morale, increased absenteeism, and poorer customer relations.

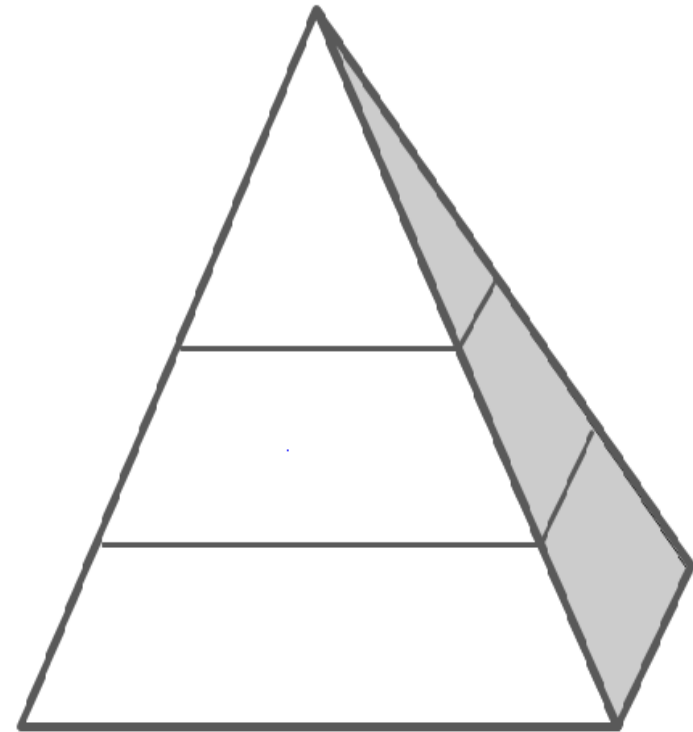
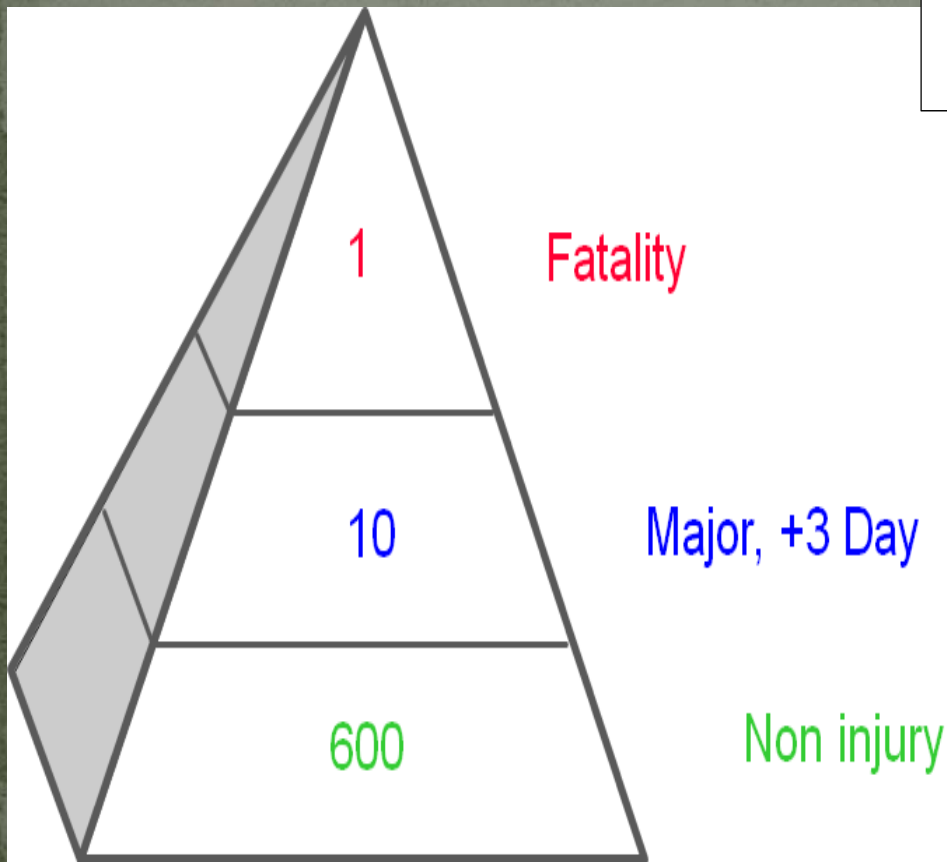
Direct & Indirect Cost...

1. Production loss
2. Material, plant. Building damage,
3. legal cost
4. Fine to be paid to the client
5. Expenditure on emergency operations such as finding the drowned body etc
6. Cleaning the site
7. Cost of putting the things in order
8. Cost of production delay
9. Effect on subsequent process
10. Cost of overtime to complete the order
11. Loss time of co-workers
12. Loss of supervisory time
13. Cost of police
14. Diverted clerical efforts for dealing with Govt. authorities
15. Legal cost
16. Loss of expertise
17. Transportation cost of injured person, dead body etc.
18. Loss of business, goodwill, name of the company

“Studies show that the ratio of indirect costs to direct costs varies widely, from a high of 20:1 to a low of 1:1”

ACCIDENT TRIANGLE

Near Misses/Unsafe Acts/Unsafe Conditions/ Dangerous Occurrences



Month: _____

ACCIDENT TRIANGLE

- Unsafe Act & Unsafe Condition
- Near Miss
- First Aid Cases
- Medical Treatment Case
- Dangerous occurrence
- Lost Time Incident
- Fatality

Figure 2: Conceptual framework of work-related accidents and ill health consequences/economic costs

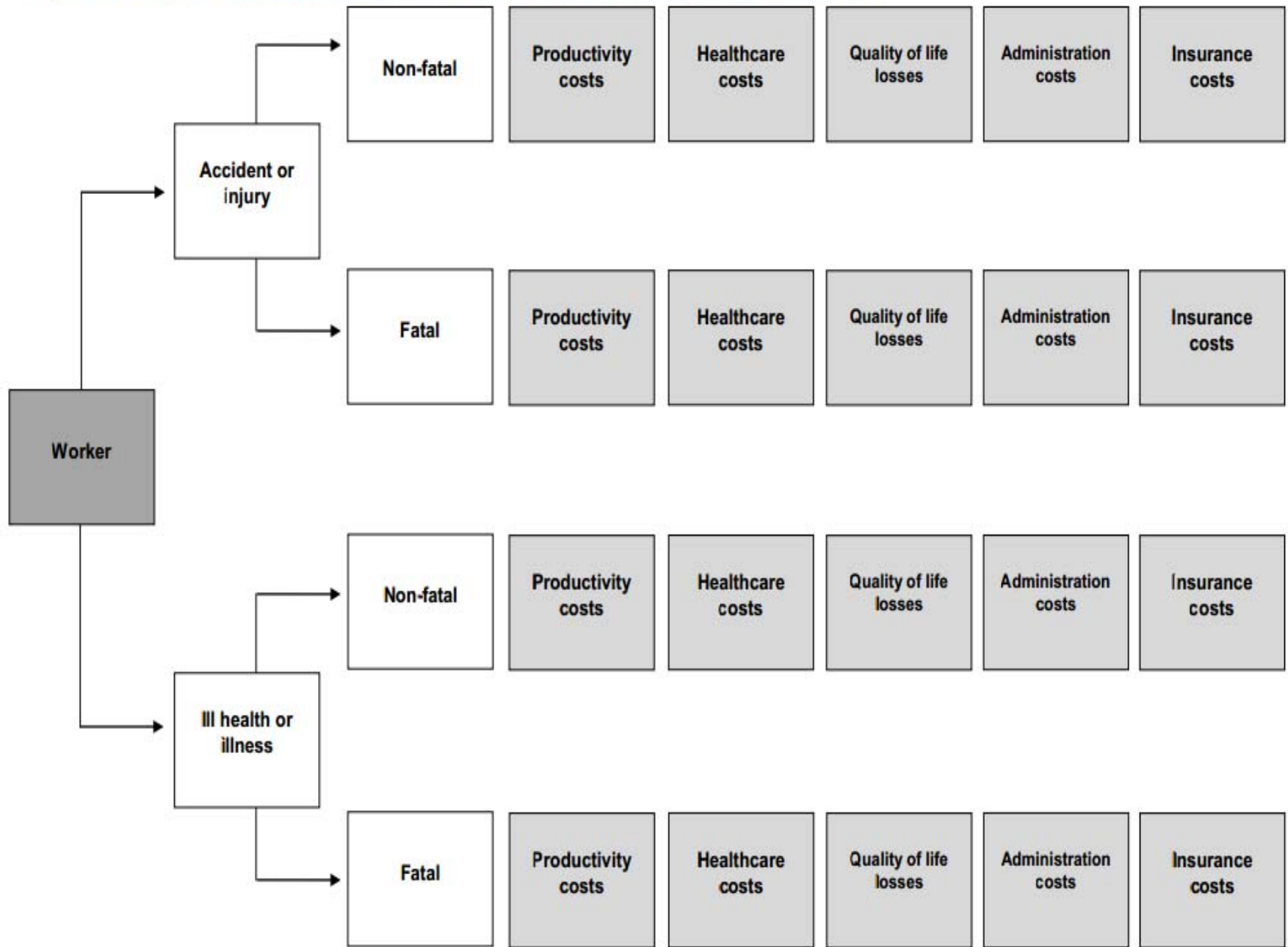


Table 1: Economic costs of work-related accidents and ill health, by perspective and type

Stakeholder	Cost type	Productivity costs	Healthcare costs	Quality of life losses	Administration costs	Insurance costs
Workers and families		Loss of present and future income (net of taxes)	Direct and indirect medical costs and rehabilitation costs	Physical pain and suffering Moral pain and suffering	Cost of time claiming benefits, waiting for treatment, etc.	Compensation payments
Employers		Sick payments Production losses Production disturbances Damaged equipment Damaged company image (All of the above costs are net of taxes)			Administrative and legal costs Cost for reintegration and re-schooling of (disabled) workers	Impact on insurance premiums
Government		Sick payments State benefits (disability, early retirement) Tax revenue losses	Direct and indirect medical costs and rehabilitation costs		Administrative and legal costs	
Society (over and above all the previous)		Loss of output (due to fatality or disability/early retirement)				



Case Study I

Cost of fatal accident to the company

Date of Accident : October 2004

Day : Sunday

Time : 15.30 hour

Name : Mr. XYZ

Designation : Erection Foreman

Age : 45 years

Accident Description

The erection of gantry crane was in progress.

Two beams of 11.5m X 1.5m X 0.75m weighing about 6 tonnes were lying on concrete sleepers. Out of two beams one beam was lying on sleeper in horizontal position. The other beam was in vertical position and was to be positioned to make the alignment with first beam. Slings were placed around the vertical beam.

Mr. XYZ went up the beam to adjust the sling. He adjusted the sling and stood in between the two beams. In the meantime someone gave signal to the Crane operator to lift the beam.

The Crane operator lifted the beam by about 4mm up its position. During that operation beams swayed towards the first beam and Mr. XYZ was caught between the two beams.

On hearing the scream, the crane operator placed the beam back on its original position. Mr. XYZ got up and tried to get out of two beams but he stumbled and fell down on sleepers, got injury near left eyebrow. He was taken to hospital. He was declared dead on his arrival.

Representation

This beam was lifted
By 4mm and it swung

Worker was caught
Between two beams



31/10/2004 18:29

Do's

- Communication has to be maintained between the crane operator & foreman
- Proper stacking
- Proper Rigging

Don'ts

- Never stand in between the beam which is going to lift up
- Improper stack of beam
- Improper rigging practice

Estimated cost of the Accident

Loss of execution for one day – Rs.2000000

Payment made on humanity ground to Mr. XYZ's family by company – Rs.20000

Payment made on humanity ground to Mr. XYZ's family by contractor – Rs.10000

Family traveling expenses – Rs.5000

Seven cranes were stopped for work, for inspection testing etc. – Rs.1000000

Two days slackness in the work – Rs.700000

Payment to be made to client – Rs. 100000

Police enquiry faced by contractor's people – Rs. 25000

Medicclaim amount.

Accident Death Cover Amount

Voluntary contribution by employees for the family.

Cost of the following items is tremendous but cannot be calculated: -

1. Company management has to face enquiry at 3 places of client.
2. Mental torture to the team for 5 days
3. Moral of the entire team was down for how many days?
4. Loss of a good head of erection team.





Case Study II

Cost of fatal accident to the company

Date of Accident: 19th July, 2013

Day: Friday

Time: 13.20 hour

Designation the persons died : Outsider – Tea Stall
Vendor

Age: 32 years

Accident Description

HDD Pilot has broken the inflammable gas pipe line at a depth of 4.2 meter, and gas leakage has started. This has affected the surrounding area.

The gas was ignited due to burning flame in stove in nearby tea stall trolley. This has resulted in a burst of fire because of which the tea stall vendor and Helper suffered burn injuries. They were rushed to nearest hospital.

The Tea Stall vendor died due to 90 percent burn injury after 3 days and helper is still under treatment.

In the fire 3 vehicles (01 Wagon R, 01 Scooter and 01 Motorcycle) parked nearby were also burnt.

Tea Stall near site



Deceased
Tea Stall Vendor



Burnt Car

Gas Leakage Started
here and got fire due to
tea stall flame



Estimated cost of the Accident

Loss of execution for one month – Rs.3000000

Payment made on humanity ground to Mr. XYZ's family by company –
Rs. 100000

Payment made on humanity ground to Mr. XYZ's family by contractor –
Rs. 50000

Cost of Vehicle damage – Rs. 400000

Cost of Gas Pipe line repair – Rs 500000

Police enquiry faced by contractor's people – Rs. 200000

Estimated cost of the Accident for Case -2

Cost of the following items is tremendous but cannot be calculated: -

1. Company management had to face enquiry from (Gas Authority and Police)
2. Mental torture to the team for 15 days. Engineer I/C Arrested for 15 days
3. Moral of the entire team was down for how many days?
4. Review and Change of Engineering Drawing, Design and Locations of Working



Another Case

A fatality took place when a waler of form work of shutter has hit on head of worker who was holding tag line of shutter. Mr. X aged 24 years has expired in this incident.

As per information provided by Contractor Site Engineer , Hydra Crane got toppled and waler of the shutter plate has hit worker.

- **Probable Causes of Accident**

- Toppling of Hydra (Reasons to be analyzed) while lifting shutter

- Shutter may have caused unbalancing of hydra as it may have hit to heap of soil located between the crane wheels and drain

- The worker may not have worn the helmet

- **Other Findings of the Investigation**

- The Hydra was not provided with the green tag (safe for use)

- A pit and soil heap are located between the crane tyres and work area

- Only one tag line was provided for the shutter





Lesson learnt:

- Plane land is required for movement of A Type Hydra
- Presence of experience rigger
- Double tag line with proper length
- Safe distance during hydra crane movement
- Proper PPE

Another Case

Fire broke out due to short circuit as a result of fall of live overhead electric cable on charged lead acid batteries. Due to heat effect, combustion took place in the lead acid batteries; smoke had emitted and spread entire sub basement area. Smoke was eventually extracted by using ventilation system recently installed by HVAC agency .

Probable Causes of Accident

Fall of overhear live electrical cable on charged lead acid batteries.

Non availability of protective cover between electric Cables and stack of batteries

Action Required for Correction and Prevention

- Providing protective cover between electric Cables and stack of batteries
- Proper stacking of overhead cables.

Before Accident:



Before Accident:



After Accident:



2009/12/28

Action taken after Accident: Acrylic Sheet Protection



LIFE SAVING INCIDENT

This is a Natural cause and due to heavy lighting effect came on Tower crane (at height 114mtrs) on 5th March 2014. Crane was totally safe because as lighting arrestor was installed on top of crane and ground earthing holding the value of less than 1 Ohm.

Due to availability of lighting arrestor, tower crane was totally safe but in turn the lighting arrestor was burnt and heavy voltage was drowned from top to earth pit. Only one fuse lost in this incident 32amps. this was installed next day morning.



Calculation of cost

The Incident Cost Calculator

Date and time of incident
 Description of incident
 Name of person involved

Dealing with incident (immediate action)

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
First-aid treatment	_____	_____
Taking injured person to hospital/home	_____	_____
Making the area safe	_____	_____
Putting out fires	_____	_____
Immediate staff downtime (eg work activity stopped)	_____	_____
Other	_____	_____

Investigation of incident

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
Staff time to report and investigate incident	_____	_____
Meetings to discuss incident etc	_____	_____
Time spent with HSE/local authority inspector	_____	_____
Consultant's fees to assist company in investigation	_____	_____
Other	_____	_____

Getting back to business

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
Assessing/rescheduling work activities	_____	_____
Recovering work/production (including staff costs)	_____	_____
Cleaning up site and disposal of waste, equipment, products etc	_____	_____
Bringing work up to standard (eg product reworking time/costs)	_____	_____
Repairing any damage/faults	_____	_____
Hiring or purchasing tools, equipment, plant, services etc	_____	_____
Other	_____	_____

Business costs

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
Salary costs of injured person while off work	_____	_____
Salary costs of replacement workers	_____	_____
Lost work time (people waiting to resume work, delays, reduced productivity, effects on other people's productivity etc)	_____	_____
Overtime costs	_____	_____
Recruitment costs for new staff	_____	_____
Contract penalties	_____	_____
Cancelled and/or lost orders	_____	_____
Other	_____	_____

Action to safeguard future business

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
Reassuring customers	_____	_____
Providing alternative sources of supply for customers	_____	_____
Other	_____	_____

Sanctions and penalties

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
Compensation claim payments	_____	_____
Solicitor's fees and legal expenses	_____	_____
Staff time dealing with legal cases	_____	_____
Fines and costs imposed due to criminal proceedings	_____	_____
Increase in insurance premiums	_____	_____
Other	_____	_____

Other

<i>Examples</i>	<i>Time spent</i>	<i>Cost (£)</i>
.	_____	_____
.	_____	_____
.	_____	_____
.	_____	_____

Total

_____	_____
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IS: 3786 : 1983

(Method for computation of Frequency Rate & severity Rates for Industrial Injuries and Classification of Industrial Accidents)

6000 Man-Days Lost = Fatality/ Both limbs amputation/loss of sight/ Very severe facial disfigurement/ Absolute Deafness

OSHA Survey

The average cost of an eye injury is \$1,463, when you consider all the hidden costs (Direct & Indirect Cost).

**The safety of the people shall be
the highest law.**

Marcus Tullius Cicero



Please Join hand
For
Safety

Thank You

PRABHAT NARAYAN
ARCHNA PUROHIT