



Proceedings of GLOGIFT 09  
November 12 – 14, 2009  
National Institute of Industrial Engineering  
Mumbai, India

## **Industrial Risk Insurance Management – A Tool for Enhancing Occupational Safety and Health in Industries**

**Dr. R. K. Elangovan**

Director (Safety)

Central Labour Institute

Government of India

Mumbai

drke.cli@gmail.com

elanrk@gmail.com

### **Abstract**

Insurance is one of the ways that the businesses and individuals reduce the financial impact of a risk occurring by providing some security, if the worst happens. The risks are inevitable in any industry but, they are manageable. Insurance covers only pure risks which are fortuitous in nature and having potential to bring in losses with an element of uncertainty about their nature and time of occurrence.

Risk can be defined as the product of probability and consequence of any hazard occurring in industry, whereas hazard refers to the substances and incidents in an industry having potential to cause danger to the well being of industrial workers and society at large. Ensuring Occupational Safety and Health is the primary duty of any management of an Industry. Incidents and consequential releases in industries have impact on safety and health of human beings, and it is imperative that they should be prevented such that the risks in any industry are kept at an optimally lowest level. Risk management is the process of making and implementing decision that will minimize the adverse effects of accidental losses in an industry and it has various methodologies such as control, avoid and retain the risk, and transfer of the risk by insurance. The probable consequences of the hazard determine potential losses, which includes property damages, business interruptions and compensation applicable to workers and society at large.

The insurer carries out assessment of the risk in order to decide premium rates. The insurance companies have a vital role in analyzing, sponsoring research and publicizing prevention measures of accidents. Industrial Risk Insurance Management requires identification of all major internal and external pure risks including the natural risks and analysis of the impact of the risks, review of existing risk control measures and initiation of follow up measures, identification of possible areas for refund of premium and suggestions regarding procedure for the same, selection of insurance coverage and the basis of risk analysis and risk assessment, and evaluation of business interruption exposure due to identified risk. Strategies for effective risk insurance management are ensuring the availability of resources and facilities on risk insurance and risk management, creating awareness on industrial risk insurance management among all stake holders, promoting risk control and the risk reduction in industries, regular documentation and publishing data on losses and loss prevention measures, conducting research in industrial risk insurance management, optimizing

the insurance coverage and establishing premium based on effective industrial risk insurance management.

This paper covers various aspects of Industrial Risk Insurance Management and its effectiveness in enhancing Occupational Safety and Health in Industries with a view to keep the risks in the industry at an optimally lowest level.

**Key Words:** Insurance, Occupational Safety and Health, Risk, hazard, Risk Management and Industrial Risk Insurance Management

## **Introduction**

Insurance is one of the ways that the businesses and individuals reduce the financial impact of a risk occurring by providing some security, if the worst happens. The risks are inevitable in any industry but, they are manageable. Insurance covers only pure risks which are fortuitous in nature and having potential to bring in losses with an element of uncertainty about their nature and time of occurrence. Risk can be defined as the product of probability and consequence of any hazard occurring in industry, whereas hazard refers to the substances and incidents in an industry having potential to cause danger to the well being of industrial workers and society at large. Ensuring Occupational Safety and Health is the primary duty of any management of an Industry. Incidents and consequential releases in industries have impact on safety and health of human beings, and it is imperative that they should be prevented such that the risks in any industry are kept at an optimally lowest level. Industrial Risk Insurance Management requires identification of all major internal and external pure risks including the natural risks and analysis of the impact of the risks, review of existing risk control measures and initiation of follow up measures, identification of possible areas for refund of premium and suggestions regarding procedure for the selection of insurance coverage. This paper covers various aspects of Industrial Risk Insurance Management and its effectiveness in enhancing Occupational Safety and Health in Industries with a view to keep the risks in the industry at an optimally lowest level.

## **Conceptual Frame Work**

### **Occupational Safety and Health (OSH)**

Safety is the condition of being safe and freedom from injuries and harm. Health can be defined as the absence of disease and the condition of being sound in body, mind or spirit especially freedom from physical disease or pain. The Occupational safety can be defined as an occupation does not, under defined conditions, lead to a state in which human life, economics or environment are endangered. Occupational Health is defined as the science of maintaining the highest degree of Physical, Mental and Social Well being in all Occupations. The OSH aims at ensuring safe and healthy workers, supervisors and managers in the industry such that the activities within the industry does not cause any harm or damage.

### **Hazard**

Hazard can be defined as a chemical or physical condition that has the potential for causing damage to people, property or the environment. It is the characteristic of the system / plant / process that represents a potential for an accident.

## **Risk**

Risk can be defined as a measure of potential economic loss, human injury, or environmental damage (cost) in terms of the probability of the loss, injury, or damage over a period of time, normally a year. It is a measure of human injury, environmental damage, or economic loss in terms of the incident likelihood and the magnitude of the loss or injury. Risks are generally classified into two broad categories:

- **Speculative Risks** : Risks which may bring in speculative losses or sometimes speculative profits as well.
- **Pure Risks** : Risks which are fortuitous in nature and will potentially bring in only losses.

Insurance covers only 'Pure Risks' with an element of 'Uncertainty' about their occurring. Pure Risk stems from loss or damage to the following targets:

- Living beings - loss of life / injury
- Property - damage / destruction
- Profits - business interruption
- Environment - impairment

## **Risk Management**

The systematic application of management policies, procedures, and practices to the tasks of analyzing, assessing, and controlling risk in order to protect employees, the general public, and the environment as well as company assets while avoiding business interruptions. The insurance assessors use various methods to assess the risk to arrive at a premium rating and some of them are as follows<sup>4,5</sup>:

- **Check lists** - Check lists are used to assess the risk.
- **Hazard Indices - MOND** - Use of hazard indices such as DOW Index, Index and IFAL(Instantaneous Fractional Annual Loss) Index.
- **Premium Rating Plans** - Plans to judge the quality of a risk.
- **Management Audits** - Audit methods concentrating on management.

Risk management techniques in the industry consists of control, avoid, retain and transfer the risk. The transferring of the risk consists of insurance and non insurance measures.

### **Insurance Management**

Insurance Management encompasses the following basic functions:

- Selection of Risks for Transfer
- Selection of Insurer
- Selection of suitable covers
- Optimization of Benefits
- Minimization of cost

#### *Selection of Risks for Transfer*

Selection of risks for transfer to Insurer must be based on a careful evaluation of Probability of the risk occurring, possible severity of loss, Size of loss which the company can retain and potential degree of variation of actual outcomes to probable estimates. Possible severity of loss should be the most important factor influencing the decision as to whether the risk must be retained or transferred. Low value losses, even with a high frequency of occurrence are better retained within the company, while high potential losses, even with least probability, are better transferred to Insurer.

#### *Selection of Insurer*

The choice of the Insurer should be made on the financial stability of the Insurer and his capacity to pay for the losses, should they occur and relative size of the Insurer and his market status.

#### *Selection of suitable covers*

Selection of suitable insurance coverage the following issues are required to be considered:

- Compliance with Statutory and contractual obligations.
- Nature of Company's operations and types of risks.
- Corporate Insurance Philosophy.

#### *Optimization of Benefits*

Insurance Management should aim at optimizing the benefits by opting for additional covers at nominal additional premium and by avoiding multiple / overlapping covers in respect of the same property.

### *Minimization of Cost*

Serious efforts must be made to obtain the maximum permissible discounts through compliance with Insurer's requirements. Negotiations must be initiated with the insurer to obtain the best possible premium rate based on the company's individual claims record, overall quantum of premium paid and special loss prevention measures taken by the company.

### **Industrial Risk Insurance Management (IRIM)**

Industrial Risk Insurance Management requires identification of all major internal and external pure risks including the natural risks and analysis of the impact of the risks, review of existing risk control measures and initiation of follow up measures, identification of possible areas for refund of premium and suggestions regarding procedure for the same, selection of insurance coverage and the basis of risk analysis and risk assessment, and evaluation of business interruption exposure due to identified risk. Strategies for effective IRIM are ensuring the availability of resources and facilities on risk insurance and risk management, creating awareness on IRIM among all stake holders, promoting risk control and the risk reduction in industries, regular documentation and publishing data on losses and loss prevention measures, conducting research in industrial risk insurance management, optimizing the insurance coverage and establishing premium based on effective industrial risk insurance management

### **Method**

The Occupational Safety and Health (OSH) are concerned with the prevention and control of both personal injury and economic loss. The OSH issues in an industry are generally consists of the following <sup>2, 5, 6:</sup>

- Incidents and Accidents
- Dangerous Occurrences
- Major Accidents involving Fire, Explosion and Toxic Release
- Occupational Health
- Occupational Diseases
- Accident Prevention Programmes
- Safety Promotion
- Safety Education and Training
- Personal Protective Equipments
- Work Environment Monitoring
- Safety Management Systems and Procedures
- Safety Standards, Codes and Guidelines
- Emergency Preparedness and Response Planning
- Risk Prevention, Reduction, Control and Mitigation
- Risk Assessment.

The losses in industries consist of material damage losses of property damages (PD) and Business Interruption (BI) losses of property damage and business interruption. Business Interruption (BI) insurance covers the consequential loss that interrupts or diminishes production, loss of profit and continuing or non-avoidance

expenses during the time required to restore production. At present, BI losses frequently exceed the associated Property Damage (PD) losses. The losses in industries include compensation payable to victims. The compensation payable for victims ranges from first party victims to fourth party victims. The first party victims being operators and the second party victims are non operating personnel or system users/visitors. The third party victims are innocent people around the industry and the fourth party victims are future generations. The compensation value increases from first party victims to fourth party victims since the number of persons exposed will be increasing as the damage zone increases <sup>3</sup>. The losses in industries world wide are tabled as follows <sup>1</sup>:

**Table No: I Losses world wide, 1985 – 89**

Year	No. of losses	Loss (US\$ million)	
		Un-indexed	Indexed
Material damage losses			
1985	198	457	571
1986	149	184	204
1987	135	877	947
1988	121	671	698
1989	115	1,336	1,350
Business interruption losses			
1985	53	146	178
1986	22	71	85
1987	31	304	349
1988	31	284	309
1989	56	1,862	1937

World major losses in Industries are as follows:

- Phillips – Pasadena, Texas; Oct 23, 1989 - \$812 million
- Shell – Norco, Louisiana; May 5, 1992 - \$297 million
- Total – La Meda France; November 9,1992 - \$297 million
- Shell – Bintulu, Indonesia; December 25, 1997 - \$275 million
- Hoechst Celanese Corp – Pampa, Texas; November 14, 1987 - \$274 million

- Fuji Oil – Sodegaura, Japan; October 16, 1992 - \$183 million
- Nipro – Flixborough, UK June 1, 1974 - \$170 million
- Qatar Petroleum – Umm Said, Qatar; April 3, 1997 - \$167 million
- Unocal – Lemont, Illinois; July 23, 1984 - \$167 million
- Pemex – Cactus Gas Plant; July 26, 1996 - \$139 million

The data on losses in Indian industries are not openly available and some of the major losses in India are as follows:

- Petrochemical Unit Loss – 1970, property damage(PD) and Business Interruption (BI), 4 crores
- Fertilizer Plant Loss – 1976, Both PD and BI, 12 Crores
- Petrochemical Vapour Cloud Explosion Loss – 1990, 50 Crores
- Vapour Cloud Explosion Loss in Refinery – 1997, 200 Crores

The trend of the largest losses in India is significantly lower compared to international scenario. The Bhopal Disaster had resulted in significant third party and property damage. The Public Liability Insurance Act, 1991, provides for public liability insurance in India, for the purpose of providing immediate relief to the persons affected by the accident occurring while handling any hazardous substance and for matters connected therewith or incidental thereto. The insurance companies have a substantial stake in analyzing accidents and sponsor research and publications devoted to preventing accidents. But it is largely hortatory in nature and not useful for analyzing the accidents<sup>3</sup>.

### **Deficiencies in the Existing IRIM System**

At present the relationship between IRIM and OSH are not clearly understood and mostly it takes into account of major risks such as fires, explosions and Toxic releases. The OSH issues are not linked to insurance measures such that an overall increase in OSH system leading to risk reduction and control in industries. Further, a well laid down mechanism has not been provided to reward industries having enhanced OSH system by reducing the payable premium, since increase in OSH in the industry will result in Risk Reduction and Control.

### **Strategies for Effective IRIM to Enhance OSH in Industries**

The IRIM can be utilised in an effective manner to promote and enhance OSH in industries. The strategies for enhancing OSH in industries through effective IRIM are as follows<sup>1, 4, 5</sup>:

- To ensure the availability of resources and facilities on Risk Insurance and Risk Management.
- To create awareness on Risk Insurance and Risk Management among all stake holders.
- Identification of all major internal and external pure risks including the natural risks and analysis of the impact of the assessed risks.

- To promote and review Risk Control and Risk Reduction measures in industries.
- To promote risk reduction in the design, operation and maintenance of industries.
- To promote safe guards and use of personal protective equipments in the industry
- To document and publish data on losses regularly.
- To conduct research in Risk Insurance and Risk Management.
- To optimize the insurance coverage and premium based on effective IRIM.
- To conduct studies such as Risk Analysis, Safety Audits, Disaster Management, Hazard and Operability Studies, Emergency planning to identify the threats, and to evolve physical/ and procedural safe guards against potential events, and selection of insurance coverage on the basis of such studies.
- To prioritize and focus, levels of threats posed by scenarios identified.
- To convert the OSH and risk information, and identified consequences into monitory terms, to use them as an effective risk management tool.
- To prioritize the risk such that the risks are optimally covered.
- Evaluation of business interruption exposure due to identified risks.
- To scrutiny all existing insurance policies in respect of rationalization of basic rate of premium and widening of covers, applicability / eligibility of discounts in premium and application of suitable clauses, warranties and conditions.
- Identification of possible areas for refund of premium and suggestions regarding procedure for the same.
- Providing guidelines on documentation requirements and procedures for claims under various policies, and evaluation of insurers.

## **Conclusion**

The Industrial Risk Insurance Management can be developed and effectively implemented in industries to enhance occupational safety and health in industries. This requires implementation of various measures by all stake holders which includes Government, Insurers, Industry owners, Trade union members and Workers. The prevented losses reduce economic losses to the industry and national economy as a whole. The implementation of various measures for effective Risk Insurance Management in a holistic manner by all the stake holders will ensure enhanced Occupational Safety and Health in Industries by reducing injuries and losses.

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