Fire Insurance
SYLLABUS

Introduction:
History of Fire Insurance; Need, Purpose & Functions of Fire Insurance, Application of basic principles, Subject matter of fire insurance, Introduction to All India Fire Tariff; Classification of Risks; Building Rules; FEA Rules/ Discount, Low-Claim Discount, Categorization of Hazardous Goods; Hazards of Speciﬁc Trades and Industries

Fire & Spl. Peril Policy:
Scope: In built causes/perils; Add on Covers; Exclusions: property, Causes and Perils; Conditions; Special Policies and Clauses; IAR Policy : Scope Rating & other aspects; Warranties and their importance; Underwriting Aspects and applications; Rating of fire Risks (Industrial & Non industrial); Rating of Add on Perils; Fixing of Sum Insured for various Subject Matters;

Fire Hazards and Fire Prevention:

Erstwhile Tariff Rules & Rating:

Documents:

Claims Legal Aspects:

Suggested Reading:
1. Diane L. Oswald, Fire Insurance Maps: Their History and Applications, Lacewing Press
2. Lester W. Zartman, Fire Insurance, William S. Hein & Company,
Fire Insurance

**Introduction:** History of Fire Insurance; Need, Purpose & Functions of Fire Insurance, Application of basic principles, Subject matter of fire insurance, Introduction to All India Fire Tariff; Classification of Risks; Building Rules; FEA Rules/ Discount, Low-Claim Discount, Categorization of Hazardous Goods; Hazards of Speciatic Trades and Industries

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**Fire Hazards and Fire Prevention:** Hazard Based Risk Classification – Originating Hazards – Contributory Hazards – Hazards Originating from Construction – Constructional Features – Silent Risk – Hazards Arising from Goods – Miscellaneous Hazards – Fire Protection Systems – Good Housekeeping.


Introduction:

A fire insurance is a contract under which the insurer in return for a consideration (premium) agrees to indemnify the insured for the financial loss which the latter may suffer due to destruction of or damage to property or goods, caused by fire, during a specified period. The contract specifies the maximum amount, agreed to by the parties at the time of the contract, which the insured can claim in case of loss. This amount is not, however, the measure of the loss. The loss can be ascertained only after the fire has occurred. The insurer is liable to make good the actual amount of loss not exceeding the maximum amount fixed under the policy.

A fire insurance policy cannot be assigned without the permission of the insurer because the insured must have insurable interest in the property at the time of contract as well as at the time of loss. The insurable interest in goods may arise out on account of (i) ownership, (ii) possession, or (iii) contract. A person with a limited interest in a property or goods may insure them to cover not only his own interest but also the interest of others in them. Under fire insurance, the following persons have insurable interest in the subject matter:

- Owner
- Mortgagee
- Pawnee
- Pawn broker
- Official receiver or assignee in insolvency proceedings
- Warehouse keeper in the goods of customer
- A person in lawful possession e.g. common carrier, wharfing, commission agent.

The term 'fire' is used in its popular and literal sense and means a fire which has 'broken bounds'. 'Fire' which is used for domestic or manufacturing purposes is not fire as long as it is confined within usual limits. In the fire insurance policy, 'Fire' means the production of light and heat by combustion or burning. Thus, fire, must result from actual ignition
and the resulting loss must be proximately caused by such ignition. The phrase 'loss or damage by fire' also includes the loss or damage caused by efforts to extinguish fire.

**The types of losses covered by fire insurance are:-**

- Goods spoiled or property damaged by water used to extinguish the fire.
- Pulling down of adjacent premises by the fire brigade in order to prevent the progress of flame.
- Breakage of goods in the process of their removal from the building where fire is raging e.g. damage caused by throwing furniture out of window.
- Wages paid to persons employed for extinguishing fire.

**The types of losses not covered by a fire insurance policy are:-**

- loss due to fire caused by earthquake, invasion, act of foreign enemy, hostilities or war, civil strife, riots, mutiny, martial law, military rising or rebellion or insurrection.
- loss caused by subterranean (underground) fire.
- loss caused by burning of property by order of any public authority.
- loss by theft during or after the occurrence of fire.
- loss or damage to property caused by its own fermentation or spontaneous combustion e.g. exploding of a bomb due to an inherent defect in it.
- loss or damage by lightening or explosion is not covered unless these cause actual ignition which spread into fire.

**A claim for loss by fire must satisfy the following conditions:-**

- The loss must be caused by actual fire or ignition and not just by high temperature.
- The proximate cause of loss should be fire.
- The loss or damage must relate to subject matter of policy.
- The ignition must be either of the goods or of the premises where goods are kept.
- The fire must be accidental, not intentional. If the fire is caused through a
malicious or deliberate act of the insured or his agents, the insurer will not be liable for the loss.

Types of Fire Insurance Policies:-

- **Specific policy**: is a policy which covers the loss up to a specific amount which is less than the real value of the property. The actual value of the property is not taken into consideration while determining the amount of indemnity. Such a policy is not subject to 'average clause'. 'Average clause' is a clause by which the insured is called upon to bear a portion of the loss himself. The main object of the clause is to check under-insurance, to encourage full insurance and to impress upon the property owners to get their property accurately valued before insurance. If the insurer has inserted an average clause, the policy is known as "Average Policy".

- **Comprehensive policy**: is also known as 'all in one' policy and covers risks like fire, theft, burglary, third party risks, etc. It may also cover loss of profits during the period the business remains closed due to fire.

- **Valued policy**: is a departure from the contract of indemnity. Under it the insured can recover a fixed amount agreed to at the time the policy is taken. In the event of loss, only the fixed amount is payable, irrespective of the actual amount of loss.

- **Floating policy**: is a policy which covers loss by fire caused to property belonging to the same person but located at different places under a single sum and for one premium. Such a policy might cover goods lying in two warehouses at two different locations. This policy is always subject to 'average clause'.

- **Replacement or Re-instatement policy**: is a policy in which the insurer inserts a re-instatement clause, whereby he undertakes to pay the cost of replacement of the property damaged or destroyed by fire. Thus, he may re-instate or replace the property instead of paying cash. In such a policy, the insurer has to select one of the two alternatives, i.e. either to pay cash or to replace the property, and afterwards he cannot change to the other option.
History of Fire Insurance

A fire at a business can devastate a business. The structure may be damaged beyond repair. Business revenues are disrupted as the business cannot remain open. In the United States in 2006 there were 1.6 million fires reported resulting in $11.3 billion in direct property loss. It is a risk that must be insured against.

Most property insurance policies and business owner policies cover fire losses. Most business property insurance policies are broad form policies. These policies list a number of perils that are covered by the policy and exclude perils that are not covered.

Fire insurance means insurance against any loss caused by fire. Section 2(61) of the Insurance Act defines fire insurance as follows: “Fire insurance business means the business of effecting, otherwise than incidentally to some other class of business, contracts of insurance against loss by or incidental to fire or other occurrence customarily included among the risks insured against in fire insurance policies.”

However, fire insurance can be purchased as a specific peril policy or the coverage increased by a specific endorsement. It is important for the business owner to understand what is not covered under a traditional broad form policy and ways to increase coverage. It is important to review what appropriate considerations when reducing premiums are and what not effective ways to save premiums are.

Insure for the Proper Valuation:

Many small business owners find that if they insure for an amount less than what the business is worth, premiums are lower. This is true. However, insurers require as a condition of the policy that the business is insured for a value equal to the actual value of the business. If it is not, and a loss occurs, a penalty is applied to the settlement amount. This penalty will almost always exceed the value of any saved premium and will come at a very bad time.

- Always insure for 100% of the business value.
• Have an independent evaluation of the business by an independent appraiser each year and adjust coverage as necessary.
• Do not rely on property tax evaluations or guesses from your insurance professional.

Actual Cash Value versus Replacement Cost:
Most policies cover a fire loss with actual cash value or ACV instead of replacement cost. Actual cash value pays the amount of the property less depreciation. This can be devastating if your business relies upon high value equipment that has a long useful life, but would be prohibitively expensive to replace. As examples: coolers, refrigerators, tow lifts, aircraft or anything that would be prohibitively expensive to buy new. Replacement coverage pays the amount to replace the property lost at whatever the replacement cost is today. Replacement coverage carries higher premiums and can be purchased as a rider or endorsement. Consider the following when considering ACV vs. replacement coverage.
  • Your business may be underinsured if it cannot replace critical facilities and equipment at the depreciated value.
  • Electronics such as computers frequently decline in real replacement cost such that actual cash value may be a better option.
  • Property valuations are frequent causes of conflict between insurers and insured. You can avoid valuation problems by carrying replacement coverage.

Certain Property Needs Separate Coverage:
Cash, valuable papers, certain types of inventory, some electronics, jewelry, and other items will require separate coverage or will be excluded from coverage. These are generally items that are impossible for the insurer to confirm and are prone to fraud.

Business Interruption Insurance:
Fire insurance does not cover "downtime" for your business nor does it cover temporary relocation. Your business needs business interruption insurance to insure against the loss
of revenue accompanying a fire and any potential relocation costs. Business interruption is a separate policy and should be considered if your business will be destroyed by being closed.

**Coverage to Rebuild According to Current Building Code**

Many businesses work in buildings or structures that are older than current building codes. In some cases, the structures are "grandfathered" in and do not have to comply with current modern standards. When a fire occurs the new construction must meet those standards. To the extent the insurer holds that such new standards are an improvement on the past structure, there is no coverage. If you have a historic building or do business in a rapidly changing area, you will want to make sure you have coverage to rebuild according to current building codes. This is often a separate endorsement or rider to the policy.

**Other Points to Consider:**

You will want to review your policy annually. Make sure accurate addresses are reflected on the policy and all endorsements and riders. Sometimes if you own many buildings a blanket fire policy covering all of the structures can save significant premiums. Finally, always have a fire plan in place and train your employees appropriately. Insurers often provide discounts for active fire prevention programs.

**Properties that are covered:**

All moveable/immoveable properties of the proposer on land (excluding those in transit) broadly categorized as follows:

i. Building (including plinth and foundations, if required):
   • Whether completed or in course of construction (excluding the value of land). Interiors, Partitions and Electricals.
   • Plant & Machinery, Equipments & Accessories (including foundations, if required)
   • Bought Second hand.
   • Bought New
   • Obsolete Machinery
Stocks:
• Raw Material
• Finished Goods
• In process
• In trade belonging to Wholesaler, Manufacturer and Retailer.

Other Contents such as
• Furniture, Fixtures and Fittings
• Cables, Piping’s
• Spares, Tools and Stores
• Household goods etc.

Specific Items such as bullion, unset precious stones, curios, work of arts, manuscripts, plans, drawings, securities, obligations or documents, stamps, coins or paper money, cheques, books of accounts, computer system records, explosives. Special types of Policies available for Stocks:

a. Declaration Policy:
To care of frequent fluctuations in Stocks/ Stock Values Minimum Sum Insured Rs. 1 crore per location. Monthly declaration on any one of the following basis to be submitted before the last day of the succeeding month.
1. Average of the highest values at risk on each day (or) Highest value on any day of the month.
2. Refund of premium, on expiry of policy, based on the average declaration upto 50% of the provisional premium.

b. Floater Policy:
• To take care of frequent changes in values at various locations.
• Single sum insured for all the stocks in all the locations.
• Nominal premium loading to cover all the stocks in all the locations. Perils Covered:
• Fire
• Lightning Explosion / Implosion
• Aircraft damage
• Riot, Strike, Malicious and Terrorism damage (hereinafter called RSMTD Perils)
• Storm, Tempest, Flood, Inundation, Hurricane, Cyclone, Typhoon and Tornado.
• Impact by any Rail/ Road vehicle or animal.
• Subsidence / Landslide including rockslide.
• Bursting and / or overflowing of water tanks, apparatus.
• Leakage form Automatic Sprinkler Installation.
• Missile Testing Operation.
• Pollution or contamination resulting from any of the above perils.
• Any insured peril resulting from pollution and contamination.
• Bush Fire.

Expenses Covered:
The policy automatically covers the following expenses incurred following loss/damage/destruction of a covered property as a result of the operation of an insured peril.

i. Architects, Surveyors and Consulting Engineers' Fees up to 3% of the claim amount.

ii. Expenses incurred for removal of debris to clear the site up to 1% of the claim amount.

Exclusions Applicable:

a. Losses/ Expenses not covered:

i. 5% of each and every claim subject to minimum of Rs.10,000 resulting from Lightning, STFI and Subsidence and Landslide including Rockslide and Rs.10,000 in respect of all other perils.

ii. Expenses incurred on Architects, Surveyors' Consultant Engineers fees and Debris Removal in excess of 3% and 1% of claim amount respectively.

iii. Loss of earnings, loss by delay, loss of market or other consequential or indirect loss or damage of any kind.

b. Perils not covered:

i. War and allied perils.

ii. Ionizing radiations and contamination by radioactivity.

iii. Pollution or Contamination

c. Properties not covered:

i. Items like manuscripts etc. unless specifically declared.
ii. Cold storage stocks due to change of temperature.

iii. Loss / damage/ destruction of any electrical and/or electronic machine, apparatus, fixture or fitting arising from over running, excessive pressure, short circuiting, arcing, self heating or leakage of electricity, from whatever cause including lightning.

iv. Loss / damage / destruction of Boilers, Economizers or other Vessels in which steam is generated machinery or apparatus subject to Centrifugal force, by its own explosion/ implosion.

**Location of Risk:**

i. The proposer shall describe all locations where the properties are built or installed or stored or kept at the inception.

ii. Any change of location of risk shall be covered on intimation of such change.

iii. Change of ownership in the insured property shall be intimated so that the new owner may be covered be means of suitable endorsement.

iv. Any material change in the location of risk, trade or manufacturing activities shall be intimated to the insurer so that the changes are endorsed to offer continuous cover.

**Period of Coverage:**

i. Fire Policy is an annual policy, generally, renewable each year.

ii. Long Term policy (for a minimum period of three years) can be considered for covering "dwellings" only with suitable discounts in premium.

iii. Cover for STFI and RSMTD perils can be considered during currency (where they are deleted at inception by choice) in special circumstances.

iv. Policy can be cancelled at any time during the currency with suitable refund of premium for the unexpired period.

**Deletion of Perils at the inception:**

STFI and RSMTD perils can be deleted at the inception of the policy for which suitable reduction in package premium rate is allowed.

**Add on covers**

In addition to the perils/ expenses covered, the proposer can opt to seek cover in respect of the following perils/ expenses at inception or during currency of the policy on payment of additional premium:
**Perils:**
Loss/ damage/ destruction of the property caused by-

- Deterioration of Stocks in Cold Storage premises due to power failure following damage due to an insured peril.
- Forest Fire.
- Impact Damage due to Insured's own Vehicles, Forklifts and the like and articles dropped there from.
- Spontaneous Combustion.
- Omission to insure additions, alterations or extensions.
- Earthquake (Fire and Shock).
- Spoilage material damage cover.
- Leakage and contamination cover.
- Temporary removal of stocks.

**Expenses:**

- Architects, Surveyors and Consulting Engineer's Fees (in excess of 3% claim amount)
- Debris Removal (in excess of 1% of claim amount)
- Loss of rent.
- Insurance of additional expenses of rent for alternative accommodation.
- Start up Expenses.

**How to select the sum insured**

- Sum Insured of a property should represent the Market Value.
- Where more than one building (and contents) are insured under a single policy, block wise values shall be furnished in respect of Building, Plant & Machinery, Stocks and other contents.
- In case the value of a property increases due to factors like increase in prime cost, Exchange rate etc. during the currency of the policy, the corresponding sum insured may be increased on payment of proportionate premium.
- Similarly, any reduction in sum insured during currency may be effected for which refund of premium will be allowed on short period basis.
Characteristics of Fire Insurance

1. Fire insurance is a contract of indemnity. The insurer is liable only to the extent of the actual loss suffered. If there is no loss there is no liability even if there is a fire.

2. Fire insurance is a contract of good faith. The policy-holder and the insurer must disclose all the material facts known to them.

3. Fire insurance policy is usually made for one year only. The policy can be renewed according to the terms of the policy.

4. The contract of insurance is embodied in a policy called the fire policy. Such policies usually cover specific properties for a specified period.

5. Insurable Interest: A fire policy is valid only if the policy-holder has an insurable interest in the property covered. Such interest must exist at the time when the loss occurs. In English cases it has been held that the following persons have insurable interest for the purposes of fire insurance- owner; tenants, bailees, including carriers; mortgages and charge-holders.

6. In case of several policies for the same property, each insurer is entitled to contribution from the others. After a loss occurs and payment is made, the insurer is subrogated to the rights and interests of the policy-holder. An insurer can reinsure a part of the risk.

7. Fire policies cover losses caused proximately by fire. The term loss by fire is interpreted liberally. Example: A women hid her jewellery under the coal in her fireplace. Later on she forgot about the jewellery and lit the fire. The jewellery was damaged. Held, she could recover under the fire policy.

8. Nothing can be recovered under a fire policy if the fire is caused by a deliberate act of policy-holder. In such cases the policy-holder is liable to criminal prosecution.

9. Fire policies generally contain a condition that the insurer will not be liable if the fire is caused by riot, civil disturbances, war and explosions. In the absence of any specific expectation the insurer is liable for all losses caused by fire, whatever may be the causes of the fire.
10. **Assignment:** According to English law a policy of fire insurance can be assigned only with the consent of the insurer. In India such consent is not necessary and the policy can be assigned as a chose-in-action under the Transfer of Property Act. The insurer is bound when notice is given to him. But the assignee cannot be recovering damages unless he has an insurable interest in the property at the time when the loss occurs. A stranger cannot sue on a fire policy.

11. **Payment of Claims:** Fire policies generally contain a clause providing that upon the occurrence of fire the insurer shall be immediately notified so that the insurer can take steps to salvage the remainder of the property and can also determine the extent of the loss. Insurance companies keep experts on their staff of value the loss. If in a policy there is an international over valuation of the property by the policy-holder, the policy may be avoided on the ground of fraud.

**Types of Fire Policies**

There may be various types of fire policies. The principal types are described below:

**Specific Policy**

A specific policy is one under which the liability of the insurer is limited to a specified sum which is less than the value of property.

**Valued Policy**

A valued policy is one under which the insurer agrees to pay a specific sum irrespective of the actual loss suffered. A valued policy is not a contract of indemnity.

**Average Policy**

Where a property is insured for a sum which is less than its value, the policy may contain a clause that the insurer shall not be liable to pay the full loss but only that proportion of the loss which the amount insured for, bears to the full value of the property. Such a clause is called the average clause and policies containing an average clause are called average policies. The phrase “subject to average” is equivalent to the insertion of an average clause. “Lloyd’s Fire Policies are usually expressed to be “subject to average”.”
Reinstatement or replacement Policy

In such policies the insurer undertakes to pay no the value of the property lost, but the cost of replacement of the property destroyed or damaged. The insurer may retain an option to replace the property instead of paying cash.

Floating Policy

When one policy covers property situated in different places it is called a floating policy. Floating policies are always subject to an average clause.

Combined Policies

A single policy may cover losses due to a variety of cases, e.g. fire together with burglary, third party losses, etc. A fire policy may include loss of profits, i.e. the insurer may undertake to indemnify the policy holder not only for the loss caused by fire but also for the loss of profits for the period during which the establishment concerned is kept closed owing to the fire.

Fire insurance is a form of property insurance which protects people from the costs incurred by fires. When a structure is covered by fire insurance, the insurance policy will pay out in the event that the structure is damaged or destroyed by fire. Some standard property insurance policies include fire insurance in their coverage, while in other cases, fire insurance may need to be purchased separately. Property owners should check with their insurance companies if they are not sure whether or not fire insurance is part of their policies, and if fire insurance is not included, it should be purchased.

Depending on the terms of the policy, fire insurance may pay out the actual value of the property after the fire, or it may pay out the replacement value. In a replacement value policy, the structure will be replaced in the event of a fire, whether it has depreciated or appreciated: in other words, if homeowners purchase a home and the value increases, as long as it is covered by a replacement value policy, the insurance company will replace it. An actual cash value policy covers the structure, less depreciation. Most accounts come with coverage limits which may need to be adjusted as property values rise and fall.
Depending on the terms of the policy, the contents of the home as well as the structure may be covered in the event of a fire. Some policies also provide a living allowance which allows the victims of a fire to rent temporary housing while their homes are repaired. These clauses in an insurance policy typically cause the policy to become more expensive, since they will represent additional costs to the insurance company in the event of a fire. However, they can be extremely useful if a fire occurs.

The cost of fire insurance varies widely. The use of fire alarms, sprinkler systems, and other safety measures can decrease the cost of the policy, and may even be required for some policies. Living in a region prone to wildfires will increase the cost of the insurance, as the risk of a payout is greatly increased. Because many people purchase fire insurance for their homes and businesses, insurance companies have a large risk pool, making fire insurance less expensive than specialized insurance like earthquake or flood insurance.

When purchasing fire insurance, people should be aware that some types of fires may not be covered. For example, a fire caused by an earthquake might be excluded from a fire insurance policy, as might a fire caused by an act of God. It is important to read the terms of the policy carefully, and to ask for clarification from the insurance representative if the terms are not clear. If a policy does not appear to meet the need, it should be renegotiated until it is satisfactory.

**Principles of Fire Insurance:**

The principal types of fire insurance policies are given below:

1. **Valued policy**

   When the agreed value of the subject matter is mentioned in the policy is named as valued policy. This value may not necessarily be the actual value of the property. In the event of toss by fire the insurer pays the admitted value of the property.
2. Unvalued policy

An unvalued policy in one in which the value of the subject matter is not declared at the time of policy taken. But in case of loss the value is computed by assessment. This is also called an open policy.

3. Specific policy

In case of specific policy, the property is insured for a definite sum. If there is loss, the stated amount will have to be paid to the policyholder. But the actual value of the subject matter is not considered in this respect. For examples if a policy is taken for Rupees 20,000 upon a building whose actual value is Rs.1,00,000 and fire occurs causing the amount of loss Rs.20,000. The insurance company will pay the whole amount of loss of Rs.20,000 irrespective of the fact that the building was insured for one-fifth of its value.

4. Average policy

An average policy is one which contains the average clause. This clause required the insurance company to pay only that portion of the loss which is borne by the insured amount to the actual value of the subject matter of the insurance. For example a value of the property is Rs.1,00,000. It is insured for Rs.60,000 (60% of the total value) and the amount of loss is Rs.60,000. The insurance company will not pay Rs.60,000 to the policyholder but will pay Rs.36,000 (60% of Rs.60,000).

5. Floating policy

A floating policy is that which covers the fluctuating risk of several goods lying in different localities for supply to various markets. Such a policy is usually taken out under one sum and one premium by the businessman whose goods are lying at docks and warehouses.

6. Stock declaration policy

This policy is taken for covering the stock where great fluctuations in the value can happen throughout the contract period. On such policy 75% of the premium has to be deposited in advance. The maximum liability of insurance company is specified in the
policy by the insured. At the end of year the average stock and final premium is calculated.

7. Loss of profit policy

Such type of policy covers the loss of profit which sustains as a result of fire. This policy is also known as consequential loss policy.

8. Standard fire policy

This policy is issued for compensation of all direct loss or damage caused by lighting and burning. Such policy also covers damages by earthquake, hair flood, explosion, cyclone and riot.

9. Reinstatement policy

Under this policy insurance company pays more than the actual value of the property destroyed by fire in order to cover the cost of replacement of the said property. It is also called as “Replacement Policy”. This type of policy is not very common in these days.

10. Schedule Policy

A schedule policy is one which insures many properties under collective terms and conditions. Details of the properties and their respective rates of premium are listed in one policy only for the convenience of the insured.

11. Sprinkler leakage policy

This type of policy covers the loss of building as a result of the damage by the leakage of liquid or water.

12. Excess policy

This policy is issued for the stock of merchandise whose value is constantly fluctuating. In such case it is not suitable to take one policy for certain sum. So the insured takes an ordinary policy for minimum value of the stock and excess policy for excess value of the stock. The actual value of the stock will be reported periodically
13. Maximum value with Discount policy

Under this policy one third discount of the premium paid is refundable to the insured at the maturity of the policy. This policy covers the risk for maximum amount.

**Importance Of Fire Insurance**

Fire insurance is the type of insurance coverage, in which an individual pays some sum of money to the company, in exchange to receive advantages for the fireplace losses. Fire insurance provides the security for home, share, home furniture, enterprise buildings, etc.,. Fireplace insurance provides the price of alternative of properties and assets, which gets broken due to the fireplace incident.

Fire insurance provides the advantages for the homeowner in these ways

- It provides the price of damage for the building
- It provides the rc, if any home furnishings are damaged due to the fireplace incident, like plywood home furniture, carpets, clothes.
- It provides alternative or maintenance price for the electronic items, which is broken due to fireplace, like television, computer, air coolers.

Fire insurance provides advantages to the enterprise in the following way

- It covers the price of share broken due to the fire
- It provides the loss of life advantages to employee, in case of loss of life occurred due to the fireplace incident.
- It provides the alternative or maintenance price for the machines, if they get broken due to fireplace incident.
- It provides the medical expenses for the employees, if they get injured due to the fireplace incident.

The expectations of living have definitely modified with the times and this only indicates that more people look for any paths that can lead to benefits. With there being so many
kinds of insurance available in the market, some select to leave fireplace insurance, stating that the threats of a fireplace developing are more distant, than say a center. Protecting property or home from fireplace is essential, more so if you know the chance of one developing is very real. Mature qualities usually bring more possibility with them. Their age predisposes them to have some substandard electrical wiring, or some leaking plumbing, which would all end up producing a fireplace. Modern, latest qualities are at less possibility, but random shoots can happen, like during hefty stormy weather when super hits. A fireplace insurance coverage protects for the harm due to a fireplace in two ways. One is paying out the sum of money comparative to the value of the home or business, after the fireplace is out. The other is by getting together with the costs of changing the piece of property or home, and in this case, that indicates fixing and restocking.

It’s bad enough when your home uses up down due to some inevitable incident, but when you do not have an insurance plan to help you move back to your typical life, its even more intense. With that being said, it is well to consider the significance of a fireplace insurance plan, especially if you know you cannot manage to change the home in your own financial initiatives. You get a chance to explain the essentials of the insurance plan you want, showing what you want protected in the insurance plan, and what to be overlooked. If you cannot get your kind of insurance plan with one insurance provider, there are always so many others to select from.

**Importance of Fire Insurance for Businesses**

No type of risk is more dangerous than fireplace and arson that intends enterprise building in the Business. This is why high-risk enterprise qualities like dining establishments are recommended to take additional fireplace insurance to make sure they are well ready for such harmful activities. Basically, fireplace insurance can provide complete take care of against fireplace and smoking damage to the property and its items. Since the actual features and price of take care of will differ on the level of take care of you used for, it is important to make sure that you are effectively protected. Thus, conditions and insurance plan information must be tested before carrying out to a replace insurance coverage. Furthermore, there are other accessories that go with fireplace
insurance that you have to involve in your take care of. Although they will price you a little bit more on charges, these will confirm to be important in the future. Such involve legal take care of, personal belongings, and old for new take care of. Just take be aware of administration accepted fireplace protection products that you can use, which will help bring down the price of your fireplace expenses.

**Need for Fire Insurance:**

Fire accidents are very much unexpected but heavily destructive. Hence, having fire insurance is very much essential.

Fire Insurance policy covers your home’s structure, or fixing and fittings, against hazard and provides you with the financial resources to replace what you have lost, so that you can get back to normal as soon as possible.

If the worst were to happen and your house burned down, where would you go, knowing that you have relatives who will pitch in to help you out during such a difficult time is great, but if you don’t have those resources, what would you do? This is where you need a fire insurance policy.

Fire insurance provides the security for home, stock, furniture, business buildings, etc; it provides the cost of replacement of properties and assets, which gets damaged due to the fire accident.

For example, if your home is destroyed or damaged enough by a fire to the point that it renders you homeless, a fire insurance policy will often pay for the reasonable increase in your living expenses, such as the additional cost of hotel stays, restaurant bills, etc.

Secondly, if you had property worth N1 million, then the insurance firm can be able to restore you to the same old position, gaining back your momentum is very easy as you just have to rebuild what you had once more. Benefits of having fire insurance

It is bad enough when your house burns down due to some unavoidable accident, but when you don’t have an insurance cover to help you slide back to your normal life, it’s even worse. With that being said, it is well to consider the importance of a fire insurance cover, especially if you know you cannot afford to replace the house in your own financial efforts.
One of the major benefits of fire insurance in general is coverage of belongings that are destroyed in a fire. This includes major appliances within the home, furnishings, clothing, jewelries, and other items of value that are specifically covered within the terms of the policy.

Fire insurance provides the price of damage for the building, if any home furnishing is damaged due to the fire incident, it provides alternative maintenance price for the electronic items like television, computer, air conditioners, which is destroyed by fire. Having fire insurance can save you from financial disaster.

Along with replacement and reimbursement of lost belongings, fire insurance can also provide financial assistance in finding a new place to live and compensating the insured party for losses not covered under a homeowner insurance plan.

Your home is probably your most valuable asset. Failing to insure it against fire damage could put you in a precarious financial situation if you leave yourself no recourse in the event of a fire. You’ve worked hard all your life to have the things that you deserve why put all of that in jeopardy by failing to have adequate insurance coverage for fire?

Fire is a commonplace occurrence, but this doesn’t mean that it is destined to happen to you. But if it does, having fire insurance to help cover your financial losses. It is a critical safety net that nobody should do without.

**Basic Principles:**

The following are the fundamental principles essential for a valid contract of fire insurance.

1. *A contract of indemnity:* Its object is to place insured as far as possible in the same financial position after a loss as that occupied immediately before the loss. The insured can recover only the amount of actual loss subject to the sum assured.
2. *Insurable Interest:* In fire insurance the insurable interest must exist at the time of affecting the insurance as well as at the time of the loss. The interest, however, may be legal or equitable or may arise under a contract of purchase or sale. The following have been held to have insurable interest in the subject matter:
   1. Owner
   2. Mortgagee
3. **Trustee**
4. **Executor**
5. **Warehouseman**
6. **Common**
7. **Bailee**
8. **Pledgee**
9. **Person in lawful possession**
10. **Finder**
11. **Insurer**
12. **Commission Agent where the agency is coupled with interest and**
13. **Tenants who are liable to pay rent after a fire. It should however, be noted that persons can insure only to the extent of such limited interest.**

3. **Contract of Good Faith**: The contract of fire insurance is a contract of Uberrimae fidei i.e., a contract based upon absolute good faith, and therefore, the insured must make full and detailed disclosure of all material facts likely to affect the judgement of fire officials in determining the rates of premium or deciding whether the proposal should be accepted. The description of the property, when asked for, should be correctly give, and all information that may be required as to the class of goods and articles that are kept on the premises or in the surrounding neighborhood, should be accurately supplied.

4. **Loss Through Fire**: Loss resulting from fire of some other cause which is the proximate cause is the risk covered under a fire insurance contract. But where the fire is caused by the insured himself or with his connivance or by the operation of a peril specifically excluded under the policy like earthquake, the loss will not be covered.

5. **A Contract from Year to Year**: A fire insurance policy is usually for one year only and can be renewed after that.

6. **Principles of Subrogation and Contribution**: Subrogation is a doctrine applicable to both fire and marine insurance by which the insurer or underwriter, becomes entitled to on his paying compensation to the insure, to claim the advantage of
every right of the insured against third parties who may be proved to be responsible for that loss, owning to such third parties negligence, default etc.

Where the subject matter has been insured with more than one insurer, each insurer has to meet the loss only ratably. If he has paid more than his share of loss, he is entitled to recover the excess paid from his co insurers. Thus, the principle of contribution applies in the case of fire insurance.

**Once Fire Insurance Principle**

The basic principles that govern Fire Insurance are:

(i) **Utmost good faith** - In insurance contracts, the legal doctrine of utmost good faith applies. The insured has the duty to disclose all material facts, which have a bearing on the insurance. A breach of this duty may make the contract void or voidable. The duty of disclosure continues throughout the policy period.

The fire proposal form also includes a declaration by the insured saying that the statements declared by him are true, and that they can form the basis of the insurance contract. These principles also expect the insured to act as if he is uninsured all the time, and takes care and safeguards his assets from the perils. Following a loss, he is then expected to salvage as much of the property as possible.

(ii) **Insurable Interest** - The requirement of insurable interest gives legal validity to insurance contracts and distinguishes them from wagers. It may be defined as the legal right to insure, where the right arises out of a pecuniary relationship between the insured and the subject matters of insurance. The destruction or damage to the latter involves the insured in financial loss. Absolute legal ownership is a clear example of insurable interest. For e.g., a bank or a financial institution which has advanced money on the security of a property, has insurable interest in that property.

In Fire insurance policy, the insurable interest should exist at the time of taking the policy, throughout its currency period and also at the time of loss/claim. Fire insurance policies are personal contracts, Â so if the property is sold or transferred, the policy is not transferred automatically.
(iii) **Indemnity** - The objective of the principle is to place the insured, as far as possible, in the same financial position after a loss, as that occupied by him, immediately before the loss.

In simple words, the principle of indemnity means the insured is indemnified only to the extent of his loss, no profit or undue benefit is extended. The indemnity is subject to the sum insured and other terms of the policy. The sum insured can be fixed on the basis of Reinstatement Value or Market Value. The term 'Market value' means, for insurance purposes, the present cost of construction of similar buildings, after deducting depreciation based on age, usage, maintenance etc.

Similarly for plant and machinery, market value is arrived at by deducting suitable depreciation for age, usage, wear and tear etc, from the current replacement costs. In all the cases, depreciation refers to the actual intrinsic physical depreciation and not those used for accounting purposes.

(iv) **Subrogation** - The principal of subrogation is the corollary of the principle of indemnity. If the loss suffered by the insured can be recovered from third parties who are responsible for the loss, the insured’s rights of recovery are transferred or subrogated to the insurers when they indemnify the loss.

(v) **Contribution** - The principle of contribution, which is also a corollary of the principle of indemnity, provides that if the same property is insured under more than one policy, the insured can recover a rate able proportion of the loss under each policy. Under no circumstances can he recover more than his loss, and make a profit.

(vi) **Proximate cause** - A cause which immediately precedes and produces the effect, as distinguished from the remote, mediate, or predisposing cause. An act from which a loss or injury results as a natural, direct, uninterrupted consequence and without which the loss or injury would not have occurred.

It is the primary cause of a loss or injury. It is not necessarily the closest cause in time or space or the first event that sets in motion a sequence of events leading to an injury.

Everyone faces some degree of risk in various aspects of their life. It may be through death, or destruction or even loss of property. The insured then has to pay premiums in order to keep their cover active. Failing to contribute such amounts may lead to an insured not being compensated. There are many generally accepted principles of
insurance that insurance companies strictly enforce. When applying for the cover, it is mandatory to disclose all material information truthfully to the best of your knowledge. This is called the principle of ultimate good faith or full disclosure. Information obtained in such instances is used to estimate the level of risk that an applicant is exposed to thus setting of amount of premiums. This is one of the most important principles of insurance since without this, the insurance contract would be null and void. All successful applicants must also pay premiums regularly as stipulated in the policy document. Paying such payments in time ensures that issues related with denial of compensation are avoided. Since this is the price for cover, it must be paid prior to acquiring a cover. This means that those who do not pay are not covered.

When insured risks happen, the policy holder is entitled to compensation of up to an amount equal to the value of the cover. Therefore, people are not entitled to gain from such arrangements. When a cover relates to property that is replaced by the insurer, any wreckage or scrap is transforms to be owned by the insurer. Anyone who has insurable interest to any property is the only one entitled to take a cover for its risks. This means that the person whose name appears in the title documents must sign for the cover to be valid. Failing to follow this rule leads to automatic denial of compensation when an insured risk happens. The cover is only active up to a certain period of time. Property insurance may last for one year or less after which the cover has to be renewed for the policy holder to remain covered. Premiums are therefore active up to the date specified on the cover certificate. Life cover is however not governed by the principle of subrogation since human life cannot be valued in monetary terms. The risk against which the loss is insured must happen so as to warrant any compensation. This is called the principle of proximal cause. For instance, when a cover has been taken against fire, the insured can only be compensated when any loss sustained is closely related to fire or is actually a fire. Therefore occurrence of any other loss causing event does not warrant compensation.

**Subject Matter of Fire Insurance:**
Subject matter of fire insurance may be of any kind of movable and immovable property having pecuniary value. The property intended to be insured must be properly described.
As per fire insurance, it is governed by Tariff; the following are the examples of insurable property such as:

1. Building
2. Electrical installation in buildings
3. Contents of buildings such as machinery, plant and equipments, accessories etc.
5. Good in open
6. Contents in dwellings, shops, hotels, etc.
7. Furniture, fixture and Fittings
8. Pipelines (including contents) located inside or outside the compound etc.

**Introduction to All India Fire Tariff**

This Tariff applies to “Erection All Risks/ Storage Cum Erection Insurance” Rating of Risks with Sum Insured up to Rs. 100 crores. (Risks with Sum Insured above Rs. 100 crores and up to Rs. 1500 crores shall be rated by Insurers as per guidelines issued vide Circular 2001/7 dated 1st January, 2001,

**Rules for Fire Protection -**

I) Minimum Compulsory Requirements applicable to all risks irrespective of Sum Insured -

i) One portable fire extinguisher of Soda Acid or Water type for every 300 sq. m of storage/erection site area or small bore hose reels as per Relevant Section of Fire Protection Manual of TAC shall be provided. The location of fire extinguishers shall be conspicuously marked by clearly visible signs. Checking and maintenances at regular intervals shall be recorded.

ii) Trained fire fighting squad shall be maintained for the site.

iii) Watch and Ward facility shall be provided round the clock at the site/premises.

iv) One fire engine of 400 GPM x 100 PSI shall always be stationed at site.

Note - Not applicable to policy with Sum Insured up to Rs. 50 crores
v) Materials and equipments stored in buildings (sheds) or in open area shall be divided into sub-units with the value, which shall not exceed 10% of the sum insured or Rs. 50 Crores whichever is less. Wherever value of single equipment stored exceeds this limit, its value shall be taken as the limit. The sub-units in open area shall be separated from each other by a distance of at least 15 m. In case of storage buildings, firewalls of 9" thickness carried up to roof shall be erected without any wall openings between the sub-units.

vi) Packing materials, scaffolding etc. combustible materials and liquids and explosive substances should be stored at a 30 M safe distance from other buildings, plants and stores.

vii) Utmost attention should be paid to good housekeeping such as -

- Orderly storage;
- Periodic removal of combustible packing material, either by burning on site at a safe distance of 100 M or removal from the site;
- Clean-up of site at least once a week;

viii) Open flame work (welding, cutting etc.) requires utmost caution. All combustible materials lying around must be removed or covered.

ix) Grass and/or any other vegetation in and around the site are regularly removed.

x) "No smoking" rules must be enforced in areas exposed to fire (stores etc.) and in the vicinity of hazardous operations.

xi) Living quarters should be well separated (100 M away) from construction site.

xii) In addition to above, the following fire prevention measures are recommended:

- The site is secured by properly constructed fence.
- Temporary buildings (offices, rest rooms, material stores etc.) be made of non-combustible materials.

Classification of Risk

Risk:

Risk may be defined as: The possibility of events, or combinations of events, occurring which have an adverse impact on the economic value of an enterprise as well as the uncertainty over the outcome of past events. It follows that any risk classification system should start by considering what the “economic value” of an enterprise is. The Working Party considered the following definition of economic value:
• Embedded Value comprising: • Shareholder net assets (assets less liabilities) plus
• Value In-Force (VIF) – the value of existing business relating to future income less costs, including the cost of capital (covering both regulatory and other capital requirements as well as economic capital) and the impact of taxes.
• Plus Goodwill relating to (a) the value of future new business, plus (b) future initiatives to:
  • Drive down costs,
  • improve persistency and
  • improve the risk: reward profile plus/minus various other frictional and structural items such as Agency Costs.

Risk classification refers to the use of observable characteristics such as gender, race, behavior, or the outcome of genetic tests to price or structure insurance policies. Risk classification helps insurers classify selected risks when underwriting. It allows them to group in individual risks with similar expected medical costs, compute the corresponding insurance premiums, and reduce adverse selection (and potential moral hazard). Only risk characteristics correlated with expected claim costs are useful for underwriting.

Information on individual risk is seldom used to determine individual participation in employer- or government-sponsored plans, but is often observed in voluntary plans and in long-term insurance markets, where it serves to define accessibility, classify policyholders in homogenous risk classes, and set the premiums of each risk class.

From this, we arrive at the following high level risk categories:
• Market Risk – the risk that as a result of market movements, a firm may be exposed to fluctuations in the value of its assets, the amount of its liabilities, or the income from its assets;
• Credit Risk – the risk of loss a firm is exposed to if a counterparty fails to perform its contractual obligations (including failure to perform them in a timely manner) including losses from downgrades and other adverse changes to the likelihood of counterparty failure;
• Insurance and Demographic Risk – the risk of adverse variation in life and general insurer and pension fund claim experience as well as more general exposure to adverse
persistency and other demographic experience, and including adverse changes to assumptions as to future experience;

• Operational Risk – the risk of loss, resulting from inadequate or failed internal processes, people and systems, or from external events.

**Liquidity Risk**

The high level categories cover threats to the quantum of embedded value i.e. threats to the amount of realistic assets in excess of realistic liabilities. However, solvency is based not just on the amount of assets relative to liabilities but also to how liquid these are. If assets are not sufficiently liquid, they may have to be sold at a discount to market value to meet liabilities as they fall due and/or a firm may have to borrow to cover the shortfall in liquid funds, giving rise to interest costs. In extremis, a firm may find itself unable to meet liabilities as they fall due.

There is thus the need to consider the liquidity as well as the amount of assets relative to liabilities and thus we need to add a high level category for Liquidity Risk which is defined as:

The risk that a firm, although solvent, either does not have available sufficient financial resources to enable it to meet its obligations as they fall due, or can secure such resources only at excessive cost.

**Risk to Goodwill – Strategy Risk**

The categories considered so far relate to existing assets and liabilities and the embedded value arising from these, but a large component of a firm’s economic value relates to goodwill in respect of future new business and initiatives to extract greater value from the existing book of business.

Thus a separate Strategy Risk category has been added to cover threats to the realisation of the goodwill of a firm in relation to future new business as well as future projects/initiatives to:

• reduce costs,
• improve persistency and
• optimize risk profile.
This will cover

• Risks leading to actual strategic outcomes differing adversely to expectations;
• Risks which may inhibit strategy and strategic choices; and
• The risk that the strategy chosen is sub-optimal.

The risk that strategy is sub-optimal includes Agency Risk where the interests of management are not aligned with the owners of a firm. Inter alia, Strategy Risks include threats which may compromise the value of the firm’s brand and its ability to leverage this to write profitable new business.

**Aggregation and Diversification Risk**

It is important in considering risk to look not just at the individual components but how they come together as a whole. Risks may be super-additive, with the combined impact greater than the sum of the individual parts. More often than not, risks are sub-additive with risks unlikely to crystallize to the same extent simultaneously.

Firms allow for this diversification benefit in assessing capital requirements, but there is a risk that the combined impact may be greater than expected i.e. that the diversification benefit is less than expected.

Thus the common risk classification system has a final, over-arching high-level category for Aggregation and Diversification Risk which is defined as:

The risk that the aggregate of risks across individual categories is greater than the sum of the individual parts and/or that anticipated diversification benefits are not fully realized.

Note that aggregation and diversification is also considered as a sub-set of each high-level category e.g. Market Risk will include an Aggregation and Diversification Risk category to address the combined impact of individual market risks such as equities and property. However this high-level category will consider impact across the other high-level categories e.g. between Market and Operational Risks.

To summaries, based on the view of risk outlined above, the common risk classification system has high-level categories for:

• Market Risk
• Credit Risk
• Insurance and Demographic Risk
• Operational Risk
• Liquidity Risk
• Strategy Risk
• Frictional Risk and
• Aggregation and Diversification Risk

MARKET RISK

Market Risk categories

The definition of Market Risk is based on the FSA’s definition in INSPRU 3.1.5G which also notes that:
“Sources of general market risk include movements in interest rates, equities, exchange rates and real estate prices” This gives rise to Equity, Interest Rate, Foreign Exchange and Property Risk categories of Market Risk. In addition:
• Interest Rate Risk is further split out with a separate Real Interest Rate Risk category covering movements in real yields and hence implied inflation;
• There is also a separate Inflation Risk category to cover adverse movements in actual (as opposed to implied) inflation rates and in rates of earnings inflation;
• A Swap Spread Risk category covers movements between Gilt and swap rates, while a Bond Spread Risk category covers the widening of corporate bond spreads over the risk-free rate;
• A Commodity Risk category covers adverse movements in commodity prices;
• There is an Alternative Investments category to cover the risks associated with Infrastructure and other alternative investments.

The categories of Market Risk above can be further broken down into:
• Specific risk (or “Alpha”) relating to an individual share, bond or property;
• Sector impacts e.g. telecom shares, regional office property markets;
• General market impacts (or “Beta”) – split domestic and overseas markets;
• Income risk relating to dividend and rent variability
• Implied volatility of options for that particular asset class;
• Model Risk relating to changes in the value of derivatives for a particular asset class due to changing models of that asset class; and
• Basis Risk relating to differences between exposures hedged and hedge assets.

Demarcation and other issues
In their work on Market Risk classification, the Working Party identified the following issues including potential areas of overlap with other risks:
• Movements in equity and other futures and forward prices may be driven in part by interest rate changes but we would propose that equity, commodity etc. futures and forward price changes be considered under Equity Risk, Commodity Risk etc..
• Should Private Equity be included under Equity Risk or as a standalone category? The common risk classification system assumes the former on the basis that exit values will ultimately be related to the wider equity market, but an argument can be made for the latter given the infrequency and subjectivity of valuations.
• Interest Rate Risk relates to movements in the risk-free rate – but what is this? Gilts? Swaps? The Working Party opted for swap rates as the regulatory definition of risk free rates may be based on swap rates under Solvency II. Also while Gilts may be considered risk-free in a UK context, the same may not be said of Euro-zone sovereign bond yields.
• Movements in bond spreads need to be split between general changes in spreads (Market Risk) and widening spreads as a result of the default or downgrade of individual bonds (which should come under Credit Risk). A possible demarcation approach may be to consider bonds downgraded / defaulting separately from other bonds. However a complication is that the market may anticipate bond defaults and downgrades and may have already priced these in prior to default / downgrade.

CREDIT RISK
Credit Risk categories
Twenty-eight categories of Credit Risk have been identified, broadly by source of Credit risk.

Credit Risk variables
For each Credit Risk, the following variables are generally considered:
• Probability of Default (PD);
• Exposure at Default (EAD) – e.g. balance outstanding for credit card defaults;
• Loss Given Default (LGD – allowing for collateral & other recoveries; and
• Migration Risk – adverse variances in transitions between credit ratings e.g. higher than expected downgrades for bonds, or for personal loans, greater than expected transition to lower internal credit ratings requiring an increase in bad debt provisions.

6.3 Credit Risk sub-categories
Credit Risks may be broken down further by variable or by category as follows:
• Model Risk e.g. increases in bad debt provisions due to change in LGD models;
• Process Risk due to random fluctuations including concentrations of exposure to a single counterparty for that category of Credit Risk;
• Parameter Estimation Risk relating to statistical estimation error;
• Regional / Sub-portfolio impacts e.g. the impact of a regional downturn in property prices on that part of a mortgage portfolio exposed to that region;
• Domestic Shocks e.g. general economic downturn, or a change in rating agency practice leading to mass downgrades; and
• Overseas Shocks e.g. currency restrictions preventing repayment, or an adverse change of government.

INSURANCE AND DEMOGRAPHIC RISK

Insurance and Demographic Risk categories
Twenty-eight categories of Insurance and Demographic Risk have been identified, broadly based on Solvency II categories in Life and Non-Life Underwriting Risk Modules.

Insurance and Demographic Risk variables
For life insurance, the key risk relates to claim frequency as the severity of the claim will usually be known. However, for general insurance, the situation is complicated by (a) uncertainty of claim severity and (b) the long-tail between occurrence, reporting and settlement that can exist in many classes of business. Thus for general insurance, the following variables are generally considered:
• Claim Frequency, Prospective – relating to uncertainty over the number of claims yet to occur; Claim Frequency, IBNR – relating to uncertainty over the number of claims that have been incurred but have yet to be reported;
• Claim Severity, Prospective – relating to uncertainty over the severity of claims yet to occur;
• Claims Severity, Claims reported but not settled – relating to uncertainty over the severity of claims reported but which have still to be settled (i.e. their number is known but not their ultimate severity); and
• Claim Severity, IBNR – relating to uncertainty over the severity of claims that have been incurred but which have yet to be reported.

**Insurance and Demographic Risk sub-categories**

Insurance and Demographic Risks may be broken down further by variable or by category as follows:
• Model Risk – e.g. increases in reserves due to new models of severity;
• Process Risk – due to random fluctuations including concentration risk to an individual exposure (e.g. a pension scheme’s exposure to a CEO’s longevity);
• Parameter Risk – arising from statistical estimation errors;
• Heterogeneity Risk – relating to heterogeneity within risk groups used to set expectations, with variations in the profile of each risk group distorting experience (e.g. where mortality rates are split only by age and sex, variations in the proportion of smokers within each age and sex band);
• Trend Risk – relating to the rate of change being different from expected;
• Endogenous Shocks – risk of step-changes in experience due to internal changes e.g. changes in underwriting standards;
• Exogenous Shocks – risk of step-changes in experience due to external factors e.g. changes in non-disclosure law, or an adverse legal ruling; and
• Catastrophe – risk of catastrophic claim events e.g. multiple death claims from a flu pandemic; or multiple property and motor claims from a windstorm. This compromises two areas of uncertainty: the frequency of catastrophic events and how many excess claims each event generates.
**Demarcation and other issues**

In their work on Insurance and Demographic Risks classification, the Working Party identified the following issues including potential areas of overlap with other risks:

- Perils such as fire will have a direct impact on businesses affected as well on an insurance company, but this direct impact is covered under Damage to Physical Assets under Operational Risk. Similarly non-insurer own firm exposure to product liability, environmental damage, health and safety and other insurable losses is also covered under Operational Risk.

- Non-disclosure – this may be viewed as a form of fraud (Operational Risk) but could also be due to say poor wording of underwriting questions. We would include non-disclosure under Insurance and Demographic Risk as unless detected, it will be implicit in claim experience.

**OPERATIONAL RISK**

*Definition of Operational Loss*

In defining Operational Risks, a considerable area of uncertainty relates to what exactly constitutes an operational loss. The Working Party has worked on the basis that operational losses include overtime and temporary staff recruited to solve a problem but not the cost of existing of staff that may be switched to problem solving i.e. marginal costs only.

Operational losses would also include lost future income e.g. from regulatory challenges to charges, which might impair embedded value.

**LIQUIDITY RISK**

*Liquidity Risk losses*

To define what constitutes Liquidity Risk, there is a need to consider the adverse consequences of having insufficient liquidity. Aside from not being able to meet liabilities as they fall due, Liquidity Risk can give rise to losses in respect of:

- Assets realized for less than balance sheet value in order to meet liabilities, possibly at “fire sale” prices; and
- Interest on borrowing to tide over liquidity shortfalls.
There is a question to what extent borrowing costs should constitute liquidity losses, given that borrowing defers the due date of payment, and there will be a time value benefit to this. The Working Party argue that only the excess interest over base rates on borrowings (net of tax relief) should count towards liquidity losses.

**Liquidity Risk categories**

The Working Party has identified seven categories of Liquidity Risk, namely:

- Non-discretionary Liability Related Outflows e.g. maturities;
- Discretionary Liability Related Outflows e.g. surrenders;
- Asset related outflows e.g. margin calls on derivatives;
- Corporate Outflows e.g. dividend payments;
- Impairment of Liquid Resources e.g. reduced marketability of listed securities; or suspension of money market funds where liquid funds are held;
  - Frictional Strains – risk that a firm, while having adequate liquidity overall, experiences a liquidity shortages in particular currency, subsidiary or fund (e.g. open-ended property fund); and
  - Aggregation of Strains – reflecting the fact that whiles a firm may be able to withstand individual strains; the combination of strains can prove too much.

**STRATEGY RISK**

*Strategy Risk categories*

Strategy Risk categories identified by the Working Party are set out in Appendix I, but these can be broadly split out into:

- Exogenous factors relating to external threats to strategy and the realization of goodwill, and which would include:
  - Impact of markets and economic conditions on sales
- Tax and Regulatory impacts such as Capital Gains Tax changes and the Retail Distribution Review (RDR)
- Actions of competitors

- Endogenous factors relating to internal constraints and failings and including: o
- Quality of products and services offered
- Project failures e.g. failure to launch new product

Endogenous factors include Brand and Reputation Risk relating not only to reputation impacts (e.g. perception of poor financial strength; reputation damage of miss selling and other operational events) but also whether our brand supports our strategy. It should be noted that reputation damage may be self-inflicted (e.g. Ratners) without any underlying operational failing.

**FRICTIONAL RISK**

This would include categories for:

a) Regulatory capital rule changes which increase capital requirements and hence the economic cost of capital borne by a firm;

b) Accounting rule changes having the same effect as a) and/or restricting the ability to pay dividends to shareholders;

c) Changes in rating agency requirements having the same effect as a) – where the firm wishes to maintain its rating;

d) Problems caused by operating structure, including:
   - lack of fungibility of capital in subsidiaries e.g. cannot transfer excess capital in one subsidiary to cover a shortfall in another;
   - changes in corporate structure adversely affect capital requirements;
   - problems in a subsidiary having a “knock on” impact on other subsidiaries whom it provides services for;

e) Tax changes including the impact on embedded value of changes to corporation and income tax and VAT, as well as own portfolio impacts affecting the rate of tax paid (e.g. life insurer moving into an “excess E” position); and

f) Increases in economic capital requirements.

**FEA Rules/ Discount**

**Section I: General Rules and Regulations**

Policy

Fire business is governed by All India Fire Tariff. Only standard Fire and special perils policy with the permitted “Add on” covers can be issued. Unless otherwise specifically
provided for, this Tariff is applicable to land-based properties only. Any risk, which has not been provided for in the Tariff shall be referred to the Committee for rating. Provisional rate of Rs.2.50 per mile shall be charged in such cases for covering the risks under Standard Fire and Special Perils Policy. No discounts shall be allowed on this rate.

**Value Policies**
Valued policy (ies) can be issued only for properties whose market value cannot be ascertained, e.g. Curios, Works of Art, Manuscripts, Obsolete machinery and the like subject to the valuation certificate being submitted and found acceptable by the insurers.

**Long Term Policies**
Fire policies for a period exceeding 12 months shall not be issued “Except for Dwellings”. Long term policies shall be issued to house/flat owners only based on either of the following 2 methods subject to the conditions below:

- The policy shall be issued for a minimum period of 3 years.
- No refund shall be allowed for mid-term cancellation of such policies.
- Mid-term inclusion of perils shall be not be allowed.
- Premium for entire policy period shall be collected in advance.

**Method A:**
Premium shall be charged in full without any discount. However sum insured under the policy shall be deemed to have increased by 10% of the original sum insured at the end of the every 12 month periods.

**Method B:**
There shall be not nay automatic increase in sum insured as in method A. however appropriate discounts shall be allowed on applicable gross premium as per table below.

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<th>DURATION OF POLICY</th>
<th>PREMIUM TO BE CHARGED</th>
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## DURATION OF POLICY
### PREMIUM TO BE CHARGED

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<tr>
<td>10 years &amp; above</td>
<td>Entire premium in advance less 50% discount</td>
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</tbody>
</table>

## Mid Term Cover:
Generally it is not permissible to grant mid-term cover for STFI and/or RSMD perils. The following provisions shall apply, where such covers are granted mid-term.

- Insurers must receive specific advice from the insurance accompanied by payment of the required additional premium in cash or by draft. This additional premium shall not be adjusted against existing Cash deposits or debited to Bank guarantee.
- Mid-term cover shall be granted for the entire property at one complex compound location covering the entire interest of the insured under the one or more policy (ies). Insured shall not have any option for selection.
- Cover shall commence 15 days after the receipt of the premium.
- The premium rates as under shall be charged on short period scale on full sum insured at one complex/compound/location covering the entire interest of the insured for the balance period up to the expiry of the policy.

## Payment of Premium
Premium shall be paid in full and shall not be accepted in installments or by deferred payments in any form.

<table>
<thead>
<tr>
<th>MID-TERM INCLUSION OF</th>
<th>SECTION III MATERIALS IN GODOWN</th>
<th>SECTION VI MATERIALS IN OPEN</th>
<th>SECTION IV, V AND VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>STFI</td>
<td>0.20%</td>
<td>0.35%</td>
<td>2.00%</td>
</tr>
<tr>
<td>RSMD</td>
<td>0.15</td>
<td>0.15%</td>
<td>0.15%</td>
</tr>
</tbody>
</table>
Minimum Premium

Minimum premium shall be Rs.100/- per policy except for risks ratable under Section III and Tiny Sector Industries under section IV in which cases the minimum premium shall be Rs.50/- per policy.

Partial Insurance

It is not permissible

- To issue a policy covering only certain portions of a building. Notwithstanding this, the plinth and foundations or only the foundation of a building may be excluded.
- To issue a policy covering only specified machinery (except boilers) parts of machine or accessories there of housed in the same block/building.

Rates for short Period Insurance

Policies for a period of less than 12 months shall be issued at the rates set out hereunder.

<table>
<thead>
<tr>
<th>For a period not exceeding</th>
<th>15 days</th>
<th>10% of the Annual rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>-do-</td>
<td>1 month</td>
<td>15% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>2 month</td>
<td>30% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>3 month</td>
<td>30% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>4 month</td>
<td>40% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>5 month</td>
<td>50% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>6 month</td>
<td>60% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>7 month</td>
<td>70% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>8 month</td>
<td>75% of the annual rate</td>
</tr>
<tr>
<td>-do-</td>
<td>9 month</td>
<td>80% of the annual rate</td>
</tr>
</tbody>
</table>

For a period exceeding 9 month The full annual rate
Loading for “DUTCHA” CONSTRUCTION

Buildings’ having walls and or roofs of wooden planks/thatched leaves and/or grass/hay of any kind/bamboo plastic cloth/asphalt cloth/canvas/tarpaulin and the like shall be treated of “Kutcha” Construction for rating. An additional rate of Rs. 4.00% shall be charged for such buildings and/or contents thereof.

RULES FOR CANCELLATIONS

For cancellation of insurance policy at the option of the insured.

- Retention of premium shall be at short period scale for the period the policy has been in force, subject of the retention of minimum by the insurer.
- During the currency, if a policy is replaced with the same insurer by a new annual one covering the identical property, refund of the premium may be allowed on pro-rate basis at the original rates for the sum insured replaced.
- For the sum insured not replaced, refund must be calculated after charging premium at short period scale on such sum for the time the insurance has been in force subject to retention of the minimum premium by the insurer.
- In case of short period policies, premium shall be retained at the applicable short period scale.
- For cancellation of insurance policy at the option of the insurer, refund of premium shall be on pro-rate basis for the unexpired term.

MID-TERM REVISION IN SUM INSURED:

Midterm revision in sum insured shall be allowed as follows:
Increase in sum insured: on pro-rata basis. Decrease in sum insured on short-period scale

Escalation Clause

It will be in order for insurers to allow automatic regular increase in the Sum insured throughout the period of the policy in return for an additional premium to be paid in advance. The terms and conditions for this extension shall be as follows:

- The selected percentage increase shall not exceed 25% of the sum insured.
- The additional premium, payable in advance, shall be at 50% of the final rate, to be charged on the selected percentage increase.
• The sum insured at any point of time would be assessed after application of the escalation clause.

• Escalation clause shall apply to policies covering building, Machinery and Accessories only and shall not apply to policies covering stock.

• Escalation clause shall apply to all policies issued on reinstatement value basis.

• Pro-rata condition of average shall continue to apply as usual

• The automatic increase operates from the date of inception upto the date of operation of any of the insured perils.

**Low-Claim Discount**

*Finite risk insurance* is the term applied within the insurance industry to describe an alternative risk transfer product that is typically a multi-year insurance contract where the insurer bears limited underwriting, credit, investment and timing risk. The assessment of risk is often conservative. The insurer and the insured share in the net profit of the transaction, including loss experience and investment income. The premium is generally well in excess of the present value of a conservative estimate of loss experience. The policy generally contains retrospective rating provisions such as

• Commutation provisions,

• Additional premium provisions, or

• An experience account

Finite risk insurance excludes products expressly sold as annuities.

The term "blended finite risk insurance" is often used to describe an insurance product that has the characteristics of finite risk, but with more risk transfer included than generally is the case for finite risk. While there is no bright line test for risk transfer, the distinction would be most readily noted in the premium for blended finite risk insurance, which must be less than the present value of a conservative estimate of loss experience by a readily noticeable degree.

**Important Terms**

"Additional premium provision" means, in the context of finite risk insurance, a provision of an insurance or reinsurance contract that requires or strongly encourages the
insured to pay the insurer some calculable amount as a result of losses paid or incurred under that insurance or reinsurance contract, excluding provisions for additional premium due to changes in exposure or policy audit.

"Commutation provision" means a verbal or written agreement, whether or not formally incorporated into an insurance or reinsurance policy, that allows the policyholder to commute the policy, usually implying that all liabilities and rights created by that contract are extinguished in return for the balance of an experience account. Generally provisions such as "profit sharing" or "low claims bonus," which also produce a return of premium that can be reduced by claims payments, are not considered Commutation Provisions if they do not extinguish the contract. Loss-based return and additional premium provisions in conventional loss-based rating plans, e.g., incurred loss retrospectively rated insurance and so-called "retention plans" used commonly in insuring US Workers' Compensation, are generally not considered Commutation Provisions for much the same reason.

Sample language for such a provision might resemble this:

**Commutation by policy holder**

This policy may be commuted by the policyholder (the “commutation”) effective as of December 31, 200_ or on each two year anniversary of such date thereafter, upon not less than ninety (90) days advance written notice to the Insurer. The date of the Commutation (the "Commutation Date") shall be set forth in such notice. Effective the Commutation Date, the Policyholder and the Insurer, finally and irrevocably release each other from any and all liability and obligations to each other under or in connection with this Policy, whether billed or unbilled, whether reported or unreported and whether known or unknown; provided that, upon the Commutation, the Insurer shall pay to the Policyholder an amount equal to the Loss Experience Account. Such Loss Experience Account shall be due and payable to the Policyholder on the Commutation Date.

"Experience account" when used in the context of finite risk refers to a provision in an insurance or reinsurance contract that, using some function of premium, insurer charges, losses paid or payable under the contract, subrogation proceeds, and interest rates, forms
the basis of an explicit or notional fund that can then be used to calculate the amount due under a additional premium provision.

An example, appropriate for a finite risk insurance policy, might look like this:

**Loss experience account**

A notional loss experience account will be created at the Inception Date, for use in evaluating amounts due under the commutation provision, which shall be updated annually thereafter as of the last day of each calendar year so long as this Policy remains in effect. The notional loss experience account will be determined as follows:

1. Beginning balance; minus
2. Payments of ultimate net loss made by the Insurer as of the immediately preceding loss payment date; plus
3. Interest income on any positive daily balance calculated using an interest rate equal to the one-year treasury rate effective on the inception date (for the first calculation) and effective at each one-year anniversary for each subsequent twelve month period.

As of the inception date, the beginning balance will be equal to 100 percent of the premium, less brokerage fees, less the insurer margin. The beginning balance for each subsequent year will be the total of (1) through (3), above, from the prior year's calculation.

**Categorization of Hazardous Goods**

‘Dangerous goods’ are materials or items with hazardous properties which, if not properly controlled, present a potential hazard to human health and safety, infrastructure and/ or their means of transport.

**Dangerous goods** are solids, liquids, or gases that can harm people, other living organisms, property, or the environment. They are often subject to chemical regulations. In the United States and sometimes in Canada dangerous goods are more commonly known as **hazardous materials**, (abbreviated as **HAZMAT** or **HazMat**). "HazMat teams" are personnel specially trained to handle dangerous goods.
Radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic. Also included are physical conditions such as compressed gases and liquids or hot materials, including all goods containing such materials or chemicals, or may have other characteristics that render them hazardous in specific circumstances.

In the United States, dangerous goods are often indicated by diamond-shaped signage on the item (see NFPA 704), its container, and/or the building where it is stored. The colors of each diamond in a way has reference to its hazard i.e.: Flammable = red because fire and heat are generally of red color, Explosive = orange, because mixing red (flammable) with yellow (oxidizing agent) creates orange. Non-flammable Non-toxic Gas = green, due to all compressed air vessels being this color in France after World War II. France is where the diamond system of HazMat identification originated.

The transportation of dangerous goods is controlled and governed by a variety of different regulatory regimes, operating at both the national and international levels. Prominent regulatory frameworks for the transportation of dangerous goods include the United Nations Recommendations on the Transport of Dangerous Goods, ICAO’s Technical Instructions, IATA’s Dangerous Goods Regulations and the IMO’s International Maritime Dangerous Goods Code. Collectively, these regulatory regimes mandate the means by which dangerous goods are to be handled, packaged, labeled and transported.

Regulatory frameworks incorporate comprehensive classification systems of hazards to provide taxonomy of dangerous goods. Classification of dangerous goods is broken down into nine classes according to the type of danger materials or items present, click on a class to read more details;

1. Explosives
2. Gases
3. Flammable Liquid
4. Flammable Solid
5. Oxidizing Substance

6. Toxic & Infectious Substance

7. Radioactive Material

8. Corrosive

9. Miscellaneous Dangerous Goods

The multitude of dangerous goods regimes across the world and the complexity of dangerous goods classifications and regulations render compliance a particularly difficult task. However DGI, as a logistics company specializing in dangerous goods, is well placed to deliver tailored solutions to all customers’ dangerous goods needs. DGI is proficient in all nine classes of dangerous goods and provides a range of services including packaging, packing, labeling, freight forwarding and training.

**CLASS 1 – EXPLOSIVES**

Explosives are materials or items which have the ability to rapidly conflagrate or detonate as a consequence of chemical reaction.

**Sub-Divisions**
Division 1.1: Substances and articles which have a mass explosion hazard

Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard

Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both

Division 1.4: Substances and articles which present no significant hazard; only a small hazard in the event of ignition or initiation during transport with any effects largely confined to the package

Division 1.5: Very insensitive substances which have a mass explosion hazard

Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard
**Reason for Regulation**

Explosives are capable by chemical reaction of producing gases at temperatures, pressures and speeds as to cause catastrophic damage through force and/or of producing otherwise hazardous amounts of heat, light, sound, gas or smoke.

**Commonly Transported Explosives**

1. Ammunition/cartridges
2. Fireworks/pyrotechnics
3. Flares
4. Blasting caps / detonators
5. Fuse
6. Primers
7. Explosive charges (blasting, demolition etc)
8. Detonating cord
9. Air bag inflators
10. Igniters
11. Rockets
12. TNT / TNT compositions
13. RDX / RDX compositions
14. PETN / PETN compositions

**DGI**

DGI are proficient in handling explosives, Class 1 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of explosives; packing, packaging, compliance, freight forwarding and training.

**CLASS 2 – GASES**

Gases are defined by dangerous goods regulations as substances which have a vapor pressure of 300 kPa or greater at 50°C or which are completely gaseous at 20°C at standard atmospheric pressure, and items containing these substances. The class encompasses compressed gases, liquefied gases, dissolved gases, refrigerated liquefied
gases, mixtures of one or more gases with one or more vapors of substances of other classes, articles charged with a gas and aerosols.

**Sub-Divisions**

Division 2.1: Flammable gases

Division 2.2: Non-flammable, non-toxic gases

Division 2.3: Toxic gases

**Reason for Regulation**

Gases are capable of posing serious hazards due to their flammability, potential as asphyxiates, ability to oxidize and/or their toxicity or corrosiveness to humans.

**Commonly Transported Gases**

1. Aerosols
2. Compressed air
3. Hydrocarbon gas-powered devices
4. Fire extinguishers
5. Gas cartridges
6. Fertilizer ammoniating solution
7. Insecticide gases
8. Refrigerant gases
9. Lighters
10. Acetylene / Oxyacetylene
11. Carbon dioxide
12. Helium / helium compounds
13. Hydrogen / hydrogen compounds
14. Oxygen / oxygen compounds
15. Nitrogen / nitrogen compounds
16. Natural gas
17. Oil gas
18. Petroleum gases
19. Butane
20. Propane  
21. Ethane  
22. Methane  
23. Diethyl ether  
24. Propane / propylene  
25. Ethylene

DGI  
DGI are proficient in handling gases, Class 2 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of gases; packing, packaging, compliance, freight forwarding and training.

CLASS 3 – FLAMMABLE LIQUIDS  
Flammable liquids are defined by dangerous goods regulations as liquids, mixtures of liquids or liquids containing solids in solution or suspension which give off a flammable vapor (have a flash point) at temperatures of not more than 60-65°C, liquids offered for transport at temperatures at or above their flash point or substances transported at elevated temperatures in a liquid state and which give off a flammable vapor at a temperature at or below the maximum transport temperature.

Sub-Divisions  
There are no subdivisions within Class 3, Flammable Liquids.

Reason for Regulation  
Flammable liquids are capable of posing serious hazards due to their volatility, combustibility and potential in causing or propagating severe conflagrations.

Commonly Transported Flammable Liquids  
1. Acetone / acetone oils  
2. Adhesives  
3. Paints / lacquers / varnishes  
4. Alcohols  
5. Perfumery products  
6. Gasoline / Petrol
7. Diesel fuel
8. Aviation fuel
9. Liquid bio-fuels
10. Coal tar / coal tar distillates
11. Petroleum crude oil
12. Petroleum distillates
13. Gas oil
14. Shale oil
15. Heating oil
16. Kerosene
17. Resins
18. Tars
19. Turpentine
20. Carbamate insecticides
21. Organochlorine pesticides
22. Organophosphorus pesticides
23. Copper based pesticides
24. Esters
25. Ethers
26. Ethanol
27. Benzene
28. Butanols
29. Dichloropropenes
30. Diethyl ether
31. Isobutanols
32. Isopropyls
33. Methanol
34. Octanes
DGI

DGI are proficient in handling flammable liquids, Class 3 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of flammable liquids; packing, packaging, compliance, freight forwarding and training.

CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH EMIT FLAMMABLE GASES WHEN IN CONTACT WITH WATER

Flammable solids are materials which, under conditions encountered in transport, are readily combustible or may cause or contribute to fire through friction, self-reactive substances which are liable to undergo a strongly exothermic reaction or solid desensitized explosives. Also included are substances which are liable to spontaneous heating under normal transport conditions, or to heating up in contact with air, and are consequently liable to catch fire and substances which emit flammable gases or become spontaneously flammable when in contact with water.

Sub-Divisions

Division 4.1: Flammable solids

Division 4.2: Substances liable to spontaneous combustion

Division 4.3: Substances which, in contact with water, emit flammable gases

Reason for Regulation

Flammable solids are capable of posing serious hazards due to their volatility, combustibility and potential in causing or propagating severe conflagrations.

Commonly Transported Flammable Solids; Spontaneous Combustibles; ‘Dangerous When Wet’ Materials

1. Alkali metals
2. Metal powders
3. Aluminum phosphate
4. Sodium batteries
5. Sodium cells
6. Firelighters
7. Matches
8. Calcium carbide
9. Camphor
10. Carbon
11. Activated carbon
12. Celluloid
13. Cerium
14. Copra
15. Seed cake
16. Oily cotton waste
17. Desensitized explosives
18. Oily fabrics
19. Oily fibers
20. Ferro cerium
21. Iron oxide (spent
22. Iron sponge/direct-reduced iron (spent)
23. Metaldehyde
24. Naphthalene
25. Nitrocellulose
26. Phosphorus
27. Sulphur

**DGI**

DGI are proficient in handling flammable solids, Class 4 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of flammable solids; packing, packaging, compliance, freight forwarding and training.

**CLASS 5 – OXIDIZING SUBSTANCES; ORGANIC PEROXIDES**

Oxidizers are defined by dangerous goods regulations as substances which may cause or contribute to combustion, generally by yielding oxygen as a result of a redox chemical
reaction. Organic peroxides are substances which may be considered derivatives of hydrogen peroxide where one or both hydrogen atoms of the chemical structure have been replaced by organic radicals.

**Sub-Divisions**
Division 5.1: Oxidizing substances

Division 5.1: Organic peroxides

**Reason for Regulation**
Oxidizers, although not necessarily combustible in themselves, can yield oxygen and in so doing cause or contribute to the combustion of other materials. Organic peroxides are thermally unstable and may exude heat whilst undergoing exothermic autocatalytic decomposition. Additionally, organic peroxides may be liable to explosive decomposition, burn rapidly, be sensitive to impact or friction, react dangerously with other substances or cause damage to eyes.

**Commonly Transported Oxidizers; Organic Peroxides**
1. Chemical oxygen generators
2. Ammonium nitrate fertilizers
3. Chlorates
4. Nitrates
5. Nitrites
6. Perchlorates
7. Permanganates
8. Persulphates
9. Aluminum nitrate
10. Ammonium dichromate
11. Ammonium nitrate
12. Ammonium persulphate
13. Calcium hypochlorite
14. Calcium nitrate
15. Calcium peroxide
16. Hydrogen peroxide
17. Magnesium peroxide
18. Lead nitrate
19. Lithium hypochlorite
20. Potassium chlorate
21. Potassium nitrate
22. Potassium chlorate
23. Potassium perchlorate
24. Potassium permanganate
25. Sodium nitrate
26. Sodium persulphate

DGI

DGI are proficient in handling oxidizing agents and organic peroxides, Class 5 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of oxidizing agents and organic peroxides; packing, packaging, compliance, freight forwarding and training.

CLASS 6 – TOXIC SUBSTANCES; INFECTIOUS SUBSTANCES

Toxic substances are those which are liable either to cause death or serious injury or to harm human health if swallowed, inhaled or by skin contact. Infectious substances are those which are known or can be reasonably expected to contain pathogens. Dangerous goods regulations define pathogens as microorganisms, such as bacteria, viruses, rickettsiae, parasites and fungi, or other agents which can cause disease in humans or animals.

Sub-Divisions

Division 6.1: Toxic substances

Division 6.2: Infectious substances

Reason for Regulation

Toxic and infectious substances can pose significant risks to human and animal health upon contact.
Commonly Transported Toxic Substances; Infectious Substances

1. Medical/Biomedical waste
2. Clinical waste
3. Biological cultures / samples / specimens
4. Medical cultures / samples / specimens
5. Tear gas substances
6. Motor fuel anti-knock mixture
7. Dyes
8. Carbamate pesticides
9. Alkaloids
10. Allyls
11. Acids
12. Arsenates
13. Arsenites
14. Cyanides
15. Thiols/mercaptans
16. Cresols
17. Barium compounds
18. Arsenics / arsenic compounds
19. Beryllium/ beryllium compounds
20. Lead compounds
21. Mercury compounds
22. Nicotine / nicotine compounds
23. Selenium compounds
24. Antimony
25. Ammonium metavanadate
26. Adiponitrile
27. Chloroform
28. Dichloromethane
29. Hexachlorophene
30. Phenol
31. Resorcinol

**DGI**

DGI are proficient in handling toxic and infectious substances, Class 6 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of oxidizing agents and organic peroxides; packing, packaging, compliance, freight forwarding and training.

**CLASS 7 – RADIOACTIVE MATERIAL**

Dangerous goods regulations define radioactive material as any material containing radionuclide where both the activity concentration and the total activity exceeds certain pre-defined values. A radionuclide is an atom with an unstable nucleus and which consequently is subject to radioactive decay.

**Sub-Divisions**

There are no subdivisions within Class 7, Radioactive Material.

**Reason for Regulation**

Whilst undergoing radioactive decay radionuclide emit ionizing radiation, which presents potentially severe risks to human health.

**Commonly Transported Radioactive Material**

1. Radioactive ores
2. Medical isotopes
3. Yellowcake
4. Density gauges
5. Mixed fission products
6. Surface contaminated objects
7. Cesium radionuclide / isotopes
8. Iridium radionuclide / isotopes
9. Americium radionuclide / isotopes
10. Plutonium radionuclide / isotopes
11. Radium radionuclide / isotopes
12. Thorium radionuclide / isotopes
13. Uranium radionuclide / isotopes
14. Depleted uranium / depleted uranium products
15. Uranium hexafluoride
16. Enriched Uranium

**DGI**

DGI are proficient in handling radioactive material, Class 7 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of radioactive material; packing, packaging, compliance, freight forwarding and training.

**CLASS 8 – CORROSIVES**

Corrosives are substances which by chemical action degrade or disintegrate other materials upon contact.

**Sub-Divisions**

There are no subdivisions within Class 8, Corrosives.

**Reason for Regulation**

Corrosives cause severe damage when in contact with living tissue or, in the case of leakage, damage or destroy surrounding materials.

**Commonly Transported Corrosives**

1. Acids/acid solutions
2. Batteries
3. Battery fluid
4. Fuel cell cartridges
5. Dyes
6. Fire extinguisher charges
7. Formaldehyde
8. Flux
9. Paints
10. Alkyl phenols
11. Amines
12. Polyamines
13. Sulphides
14. Polysulphides
15. Chlorides
16. Chlorosilanes
17. Bromine
18. Cyclohexylamine
19. Phenol / carbolic acid
20. Hydrofluoric acid
21. Hydrochloric acid
22. Sulfuric acid
23. Nitric acid
24. Sludge acid
25. Hydrogen fluoride
26. Iodine
27. Morph line

**DGI**

DGI are proficient in handling corrosives, Class 8 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of corrosives; packing, packaging, compliance, freight forwarding and training.

**CLASS 9 – MISCELLANEOUS DANGEROUS GOODS**

Miscellaneous dangerous goods are substances and articles which during transport present a danger or hazard not covered by other classes. This class encompasses, but is not limited to, environmentally hazardous substances, substances that are transported at elevated temperatures, miscellaneous articles and substances, genetically modified organisms and micro-organisms and (depending on the method of transport) magnetized materials and aviation regulated substances.

**Sub-Divisions**

There are no subdivisions within Class 9, Miscellaneous Dangerous Goods.
**Reason for Regulation**

Miscellaneous dangerous goods present a wide array of potential hazards to human health and safety, infrastructure and/or their means of transport.

**Commonly Transported Miscellaneous Dangerous Goods**

1. Dry ice / cardice / solid carbon dioxide
2. Expandable polymeric beads / polystyrene beads
3. Ammonium nitrate fertilizers
4. Blue asbestos / crocidolite
5. Lithium ion batteries
6. Lithium metal batteries
7. Battery powered equipment
8. Battery powered vehicles
9. Fuel cell engines
10. Internal combustion engines
11. Vehicles
12. Magnetized material
13. Dangerous goods in apparatus
14. Dangerous goods in machinery
15. Genetically modified organisms
16. Genetically modified micro-organisms
17. Chemical kits
18. First aid kits
19. Life saving appliances
20. Air bag modules
21. Seatbelt pretensioners
22. Plastics moulding compound
23. Castor bean plant products
24. Polychlorinated biphenyls
25. Polychlorinated terphenyls
26. Dibromodifluoromethane
27. Benzaldehyde
DGI

DGI are proficient in handling miscellaneous dangerous goods, Class 9 Dangerous Goods. DGI have the ability to service all customer requests pertaining to the logistics of miscellaneous dangerous goods; packing, packaging, compliance, freight forwarding and training.

Hazards of Specialty Trades and Industries

As a contractor with a specialty trade, you work hard to build your business and a reputation your clients can trust. Help protect your business with specialty trade contractors’ insurance you can trust – from a company that understands your needs.

The Hartford specializes in coverage for small business artisans who are in construction-related trades. We offer one-stop protection to help meet all of your insurance needs, backed by decades of experience and specialists with in-depth knowledge of the specialty trade industry.

Target Contractors

Our market includes businesses with an annual payroll of less than $1 million and fewer than 10 employees in the following specialty trades:

- Landscapers
- Painters
- Floor installation
- Heating and air conditioning specialists
- Electricians

If your business is larger than our target, please visit our Midsize and Large Contractor Business page. Also refer to our Specialty Programs for customized solutions we offer to higher hazard businesses that require specialized underwriting, loss control and claims handling.
Specialized Coverage for Your Special Needs

Our specialty trade contractors’ insurance includes broad coverage to help meet your unique needs.

- Spectrum, The Hartford’s Business Owners Policy, provides property and business liability coverage, including key coverage’s that construction contractors need – for tools, equipment, materials, supplies and more. You may also purchase bundled coverage’s through our optional stretch endorsements designed specifically for specialty trade contractors.

- Commercial auto insurance from The Hartford extends beyond the coverage offered by most standard policies, including coverage for many types of permanently installed electronic equipment, such as GPS units that are so important to businesses like yours that are constantly on the road.

- Our workers’ compensation coverage is broad, providing much useful coverage at no additional cost.

The Hartford offers you an array of coverage options. Our solutions are designed to address the needs of both the injured employee and the employer in a quick and efficient manner. We also offer coverage for heavy trade and general contractors. Please visit our Midsize to Large Contractor page to learn more.

Services

When you purchase insurance from The Hartford, you not only get quality coverage, you also get responsive service. Policyholder services are available online and by phone. Claims handlers are on call 24/7.

Our specialized claim teams know how to navigate the risks posed by construction claims, whether for construction defects or the large losses that can be associated with serious on-the-job injuries. For workers’ compensation claims, our large network of healthcare providers and services can help control your costs and return your employees to work as soon as medically appropriate.
Fire and Special Peril Policy

What are the basic principles of insurance?

The basic principles of insurance under common law may be defined as an agreement between the insurers and the insured whereby the insurers having received premium undertake to make good the financial loss subject to limit of sum insured suffered by the Insured as a result of damage or destruction of the insured property by fire or other specified perils during a stated period.

How are they applied to fire insurance?

The fire insurance is also subject to certain special principles evolved under common law. Whether stated in the policy or not, the common law principles automatically apply to fire insurance contracts. These are all called as implied condition. These relate to

1. Utmost good faith
2. Insurable Interest
3. Subject matter of insurance
4. Indemnity

Utmost good faith

In ordinary commercial contracts the parties to the contract are required to observe only good faith i.e. There should not be any fraudulent.

However, in insurance contracts the legal doctrine of utmost good faith applies. It means it is the duty of the insured to disclose all material facts bearing on the insurance. The insurers rely entirely on information given by the proposer. The insurer can avoid the contract if they provide that certain material information has not been given or has been incorrectly given by the insured.

Insurable Interest

Insurable Interest, in simple terms, means the legal right of insure. To constitute insurable interest, three essentials are required
1. There must be a physical object, capable of being destroyed or damaged by fire or other insured perils.
2. This physical object must be the subject matter of insurance.
3. The insured must have some relationship to such object recognized by law, so that he stands to benefit by its safety or be prejudiced by its destruction or damage.

**Existence of the subject matter**

The subject matter of insurance must exist when the contract is affected and must be described adequately to ensure that it can be identified in the event of loss.

The insured can only recover up to the extent of insurable interest, irrespective of sum for which he has insured.

**Indemnity**

The principle of indemnity, which arises under common law, ensures that the insured does not recover more than actual loss suffered by him. The indemnity is subject to the terms and conditions of the policy depreciation, salvage, underinsurance and policy excess.

Elaborate risks covered under Standard Fire and Special Perils Policy with provision of deductible excess. Which are the perils covered under the standard Fire and Special Perils Policy?

The following perils are covered under standard fire and special perils policy

1. Fire
2. Lightning
3. Explosion / Implosion
4. Aircraft damage
5. Riot, Strike, Malicious damage
7. Impact by any Rail/ Road vehicle or animal
8. Subsidence / Landslide including rockslide.
9. Bursting and / or overflowing of water tanks, apparatus.
11. Leakage form Automatic Sprinkler Installation
12. Bush Fire

Deductibles
1. The first 5% of each and every claim subject to minimum of Rs. 10,000/- in respect of each and every loss arising out of Act of God perils such as lightning, STFI and Subsidence and Landslide including Rockslide covered under the policy.
2. The first 10,000/- for each and every loss arising out of other perils.

There are three types of special policies available under the fire department for covering the stocks in the insured’s premises.
1. Floater Policy
2. Declaration Policy
3. Floater Declaration Policy

Need for Floater Policy
These policies are issued where stocks are shuttered between different locations so that it is not possible for the insured to specify the value of the stocks at each location.
A floater policy can thus be issued covering stocks in more than one location under one amount by charging 10 % extra premium over and above the highest rate applicable to any one risk.

Floater Policy
In order to take care of stocks at various locations, the Floater Policies are issued with the following conditions.
1. Single sum insured for all the stocks in more than one location.
2. Stocks kept in specified location only can be covered.
3. The rate shall be the highest rate applicable to insured's stocks at any location with a loading of 10 %.
4. In case Stocks in a process block are covered under the Floater Policy and the rate for the process block is higher than the storage rate, the process rate plus 10% loading shall apply.
5. Presence of “Kutcha” construction may be ignored.
6. If stocks situated within go downs / process blocks in the same compound are covered under floater policy, no floater extra is chargeable.

Need for Declaration Policy
A Declaration policy is best suited for a client whose stocks are subject to frequent fluctuation during the currency of the insurance. In case the insured avail an ordinary stock policy for a particular amount and there is an increase in stock value during the policy period, the policy will not provide the complete coverage. The condition of average will apply to the extent of increase in stock value. Usually any increase or decrease in the value of stocks has to be intimated to the insurance company so that stocks are adequately insured at all times. However, this is not only cumbersome procedure for the insured but for the insurer as well, as endorsements would have to be passed and additional premium charged or refunded as the case may be. To overcome this problem in cases where there is a frequent fluctuation in the value of stocks, a declaration may be issued.

Declaration Policies
1. To take care of frequent fluctuations in stocks/stock values, Declaration Policies are issued.
2. The minimum sum insured shall be Rs 1 crore in one or more locations and the sum insured should not be less than Rs. 25 lakhs in at least one of these locations.
3. It is necessary that the declared values should approximate to this figure at sometime during the policy year.
4. Monthly declarations based on
   a) The average of the values at risk on each day of the month or
   b) The highest value at risk during the month shall be submitted by the insured latest by the last day of the succeeding month.
5. If declarations are not received within the specified period, the full sum insured under the policy shall be deemed to have been declared.
6. Reduction in sum insured shall not be allowed under any circumstances.
7. Refund of premium on adjustment based on the declarations/ cancellations shall not exceed 50% of the total premium.
8. The basis of value for declaration shall be the Market Value anterior to the loss.
9. It is not permissible to issue declaration policy in respect of
   i. Insurance required for a short period.
   ii. Stocks undergoing process.
   iii. Stocks at Railway sidings
10. If after occurrence of any loss it is found that the amount of last declaration previous to the loss is less than the amount that ought to have been declared, then the amount which would have been recoverable by the insured shall be reduced in such proportion as the amount of said last declaration bears to the amount that ought to have been declared.

**Floater Declaration Policies**

Floater Declaration policies can be issued subject to a minimum sum insured of Rs 2 crores and compliance with the Rules for Floater and Declaration Policies respectively except that the minimum retention shall be 80% of the annual premium. Briefly explain the provisions of fire tariff regarding rating of silent risks
1. Factories where no manufacturing / storage activities are carried out continuously for 30 days or more are eligible to be rated under silent risks.
2. Retention of the premium shall be based on the appropriate storage rate or silent risk rate of Re.0.80% whichever is higher.
3. The silent rates are not applicable if a risk goes silent following a loss under the policy.
4. Risks becoming silent shall not be entitled to any discounts.

**Add-on Covers**

The insurer can issue the standard fire policy with added benefits at the option of the policyholders by charging additional premium. These added benefits are as follows:
1. Architects, Surveyors and Consulting engineer’s fees (in excess of 3% claim amount)
2. Debris removal ( in excess of 1% of claim amount)
3. Deterioration of stocks in cold storage due to power failure
4. Forest fire
5. Spontaneous combustion
6. Earthquake as per minimum rates and excess applicable as specified in the tariff.
7. Omission to insure additions, alterations or extensions.

On the basis of judicial decisions, the following losses are also covered by fire insurance.
(a) Goods spoiled or property damaged by water used to extinguish the fire.
(b) Pulling down of adjacent buildings by the fire brigade in order to prevent the spread of fire.
(d) Wages paid to persons employed for extinguishing fire.

**Properties that are covered:**
All moveable/ immovable properties of the proposer on land (excluding those in transit) broadly categorized as follows:

1. **Building (including plinth and foundations, if required):**
   - Whether completed or in course of construction (excluding the value of land).
   - Interiors, Partitions and Electricals.

2. **Plant & Machinery, Equipments & Accessories (including foundations, if required)**
   - Bought Second hand.
   - Bought New
   - Obsolete Machinery

3. **Stocks:**
   - Raw Material
   - Finished Goods
   - In process
   - In trade belonging to Wholesaler, Manufacturer and Retailer.

4. **Other Contents such as**
   - Furniture, Fixtures and Fittings
   - Cables, Piping’s
• Spares, Tools and Stores
• Household goods etc.

5. **Specific Items such as** bullion, unset precious stones, curios, work of arts, manuscripts, plans, drawings, securities, obligations or documents, stamps, coins or paper money, cheques, books of accounts, computer system records, explosives.

A traditional and a time-tested policy that offers cover against fire and allied perils and the perils of nature. The policy can cover building (including plinth and foundation), plant and machinery, stocks, furniture, fixtures and fittings and other contents. The standard cover is a named-peril policy covering the following perils:

• Fire
• Explosion/ Implosion (excluding explosion/ implosion of boilers, economizers or other vessels, machinery or apparatus in which steam is generated)
• Direct lightning
• Aircraft including damage caused by any article dropped there from (excluding pressure waves)
• Riot, strike, malicious damage-excluding terrorism
• Storm, cyclone, typhoon, tempest, hurricane, tornado, flood and inundation
• Impact by any rail/ road/ vehicle/ animal (other than own)
• Subsidence and landslide including rockslide
• Bursting and/ or overflowing of water tanks, apparatus and pipes
• Missile testing operations
• Leakage of water from automatic sprinkler installations
• Bush fire (excluding forest fire)
• Terrorism risk can be covered on payment of additional premium
• Removal of debris up to 1% of claim amount
• Architect's and Surveyor's fees up to 3% of claim amount
• Quick and expert risk inspections where required
- Expert Risk Control Program me by our Risk Engineers on all aspects of safety and Loss Prevention/ Minimization
- Availability of various optional covers
- Rating based on individual risk features including claims experience and fire protection systems availability
- Superior claim service

**Exclusions: property, Causes and Perils**

There are the three types of insurance coverage. Replacement cost coverage pays the cost of replacing your property regardless of depreciation or appreciation. Premiums for this type of coverage are based on replacement cost values, and not based on actual cash value. Actual cash value coverage provides for replacement cost minus depreciation. Extended replacement cost will pay over the coverage limit if the costs for construction have increased. This generally will not exceed 25% of the limit. When you obtain an insurance policy, the coverage limit established is the maximum amount the insurance company will pay out in case of loss of property.

This amount will need to fluctuate if homes in your neighborhood are rising; the amount needs to be in step with the actual value of your home. In case of a fire, household content replacement is tabulated as a percentage of the value of the home. In case of high-value items, the insurance company may ask to specifically cover these items separate from the other household contents. One last coverage option is to have alternative living arrangements included in a policy. If a fire leaves your home uninhabitable, the policy can help pay for a hotel or other living arrangements.

**Main exclusions of the Standard Fire Product**

The general exclusions are broadly classified as:

- Fire due to own fermentation, natural heating or spontaneous combustion of stocks
- Burning by order of any public authority
- Explosion of boilers or steam generating vessels and machinery subject to centrifugal force by its own explosion or implosion
• Pressure waves generated by aircraft
• Total or partial cessation of work/retarding/interruption of any process or operations arising out of riot, strike, malicious damage
• Burglary, housebreaking, theft, larceny in any malicious act
• Impact damage by rail/road vehicle or animal belonging to the insured or employee or any occupier of the premises
• Normal cracking, settlement, bedding down, upheaval of land/structures, coastal or river erosion, defective design, workmanship or use of defective materials
• Destruction or damage caused by forest fire
• Excess amount mentioned in the schedule/policy i.e. the minimum amount of claim to be borne by the client
• Loss or damage caused by war or warlike situations
• Loss or damage by pollution or contamination except due to insured peril
• Loss or damage to electrical machine/apparatus which is the source of fire
• Architects', surveyors' and consulting engineers' fees exceeding 3% and debris removal expenses exceeding 1% of claim amount
• Any consequential losses

Terms and conditions
This is usually a standard form so it doesn't deal with your personal situation or your specific relationship with the insurer. Of course insurers deal with thousands of insured people, so the terms and conditions must to some extent is universal.

Policy Schedule:
This is where your personal details are recorded. It will include details such as
• your name and address;
• the amount of cover;
• type of insurance;
• details of the items insured e.g. your car type and model;
• Special restrictions etc.

It is prudent to ensure that the schedule and the terms and conditions are not in conflict, especially with regard to special restrictions.
Where to keep it:

You must ensure that your policy is kept in a safe place, and that someone else is aware of that place as well. You should also keep copies of all correspondence between yourself and the insurance company.

It is always a good idea to keep records of any valuable items in your house as proof of ownership.

Choosing a policy

It is a good idea to either act on the recommendation of a friend, if they have had dealings with a broker or company (especially if they have made a claim in the past), or to carefully shop around for the best deal. This can include getting professional advice. Remember, this does not necessarily mean it will be the cheapest. At the time that you intend to claim on the policy you may find yourself far more interested in the way the company handles your claim.

Make sure you understand the policy, that its terms and conditions have been understood or adequately explained, and specifically what the insurance does and does not cover. If you are looking to deal with an insurance broker, find out if they are licensed with the Australian Securities Insurance Commission (ASIC).

Filling out the application

- Be careful with questions that are not specific - if you do not disclose information it may be used to reject a claim at alter time.
- Answer all questions, even if you are not sure the question is relevant to you. Again, a lack of disclosure may be used to reject a claim.
- Always be prepared to give additional information, and if necessary attach a separate sheet of paper. Always do a final check when you receive the policy.
- Don't just put it in a drawer and forget about it (and remember where you put it!).

Utmost good faith

The law obligates all parties to the insurance contract to act towards each other in "utmost good faith". You are obliged to:

- fulfill your duty of disclosure (see "Duties" fact sheet);
- make honest statements in the application;
- Fulfill the requests of the insurer.

The insurer is obliged to:
- settle claims quickly;
- have a genuine reason to refuse claims;
- Disclose restrictions in the policy.

Part of the duty of utmost good faith means that the insurer must specifically draw the insurer's attention to any exclusion clauses in the policy.

**Levels of payment**

There are two types of payment in a home contents policy:

- Replacement or reinstatement policy. This replaces your content according to its current value, unless specific items (e.g. carpet) are to take into account wear and tear;
- Indemnity policy. This type of payment allows for depreciation of the asset at the time of the claim. In general these types of policies cheaper than a replacement policy, because the insurer will not have to pay out as much after taking account of the depreciation.

**Is my property underinsured?**

As property owners, most of us are underinsured. That means we are not insured for the replacement costs of our assets. Of course, estimating the replacement cost of our houses and other assets is no easy matter, but there are some steps you can take to minimize the chances of underinsurance:

- make sure you understand all the components of the total cost of rebuilding, including demolition, architecture, debris removal, engineering and council costs, alternative accommodation - in fact anything that is associated with rebuilding;
- contact the insurance company when you do renovations to ensure that the added property value will be included if there is a claim (e.g. because of a fire) – don't wait for the renewal date;
- include the value of any improvements to your property (that will include outdoor additions such as pergolas and garden sheds);
• Keep a complete inventory of household contents, including photos where necessary e.g. you might want to photograph in segments a large book selection. Many insured rely on the value of the land that is stated in the Council rate notice, assuming that the extra value in the property will afford an accurate assessment of the value of the building.

**How do I value my property?**

Insurers often place so-called web calculators on their internet sites, intended to make it straightforward to estimate the required cover. They use two methods:

• The "elemental" – looks at different "elements" of the building e.g. whether it is on a slope, the postcode, leadlight windows, period features etc.

• The "cost per square meter" – a simple calculation derived from the size of the house and the building materials.

Both methods are not overly reliable, but the elemental method probably provides a more accurate estimate. It is a good idea to put the same data into several calculators and watch for major differences in results.

Always ring the insurance company and discuss the valuation, including whether you should increase your premiums to cover rebuilding costs. You pay the premiums, so you have every right to make the call!

**What about contents – can I also be underinsured?**

Watch for underinsurance of home contents – how is the claim assessed?

• **Replacement or reinstatement policy.** This replaces your content according to its current value, unless specific items (e.g. carpet) are to take into account wear and tear.

• **Indemnity policy.** This type of payment allows for depreciation of the asset at the time of the claim. In general these types of policies are cheaper than a replacement policy, because the insurer will not have to pay out as much after taking account of the depreciation.

Again the lesson is to talk to your insurance company or broker so you do not lose the value of contents.
**Cover notes**
This is the temporary cover that most insurance companies will issue until you have taken a formal insurance policy. It only lasts for a limited period of time.

**Cooling off period**
You have a 14-day cooling off period to purchasers of many risk insurance products (for example, car and home insurance). The company must refund the premium. According to ASIC, "you have 14 days from the time your investment is confirmed by letter, fax or email to change your mind.
If you don't receive confirmation, your cooling off period begins at the end of the fifth day after the product was issued to you."

**Renewing the policy**
For most of us there will be annual renewals of insurance, especially for consumer insurance such as car and home. The insurer has the right not to renew your policy, but the law requires that they inform you in writing whether a renewal is offered prior to the expiry of your current policy. Under the law the insurance will continue if the insurer fails to write to you with the information that the insurance is to expire. However, this will not apply if you have arranged other insurance. The insurer must give you at least 14 days notice that you must renew the policy.

**You fail to renew**
It is crucial that you renew your policy before the current one expires. If you don't you will not be covered for any losses you suffer. In some situations the insurer may agree to pay anyway, although this will often depend on the amount of the loss and the length of time you have held the insurance. However, you will not have the legal right to enforce the contract.

**Exclusion clauses**
An exclusion clause is simply a part of the contract that operated to exclude, restrict or qualify the right of the insured. A good example of this is the usual clause in a car insurance policy that denies liability to pay a claim if the insured was over the legal alcohol limit.
Reliance on exclusion clauses

Amongst other factors, some of the issues that may be taken into account when an insurer attempts to rely on an exclusion clause:

- Who caused the loss? For instance, if you were smoking in bed at the time of a fire, and a fire caused this way is a breach of your policy, you may not in fact be in breach if the fire was caused by an electrical fault. In this case the fact that you were smoking in bed would be coincidental and not the cause of the fire.

- Did you know about the circumstance at the time you signed the policy? For instance, if you have disability insurance that requires disclosure of any pre-existing illness, the insurance company may not be able to rely on the exclusion clause if you were not aware of the illness that caused the loss.

- Is the exclusion clause unambiguous and clearly related to the event that took place?

Cancellation of the contract

The insurance company has the right to cancel the insurance if the insured has:

- failed to comply with either the duty of disclosure or the duty of utmost good faith;

- Broken a condition of the contract or made a fraudulent claim.

The law requires minimum notice of cancellation. In general you will receive a refund for the unexpired portion of the policy. If your policy is cancelled it is important to get legal advice. There may be room to maneuver with the insurer or legal remedies available to you.

The types of losses covered by fire insurance are:-

- Goods spoiled or property damaged by water used to extinguish the fire.

- Pulling down of adjacent premises by the fire brigade in order to prevent the progress of flame.
• Breakage of goods in the process of their removal from the building where fire is raging e.g. damage caused by throwing furniture out of window.
• Wages paid to persons employed for extinguishing fire.

The types of losses not covered by a fire insurance policy are:-

• Loss due to fire caused by earthquake, invasion, act of foreign enemy, hostilities or war, civil strife, riots, mutiny, martial law, military rising or rebellion or insurrection.
• Loss caused by subterranean (underground) fire.
• Loss caused by burning of property by order of any public authority.
• Loss by theft during or after the occurrence of fire.
• Loss or damage to property caused by its own fermentation or spontaneous combustion e.g. exploding of a bomb due to an inherent defect in it.
• Loss or damage by lightening or explosion is not covered unless these cause actual ignition which spread into fire.

A claim for loss by fire must satisfy the following conditions:-

• The loss must be caused by actual fire or ignition and not just by high temperature.
• The proximate cause of loss should be fire.
• The loss or damage must relate to subject matter of policy.
• The ignition must be either of the goods or of the premises where goods are kept.
• The fire must be accidental, not intentional. If the fire is caused through a malicious or deliberate act of the insured or his agents, the insurer will not be liable for the loss.

Types of Fire Insurance Policies:-

• **Specific policy**: - is a policy which covers the loss up to a specific amount which is less than the real value of the property. The actual value of the property is not taken into consideration while determining the amount of indemnity. Such a
policy is not subject to 'average clause'. 'Average clause' is a clause by which the insured is called upon to bear a portion of the loss himself. The main object of the clause is to check under-insurance, to encourage full insurance and to impress upon the property owners to get their property accurately valued before insurance. If the insurer has inserted an average clause, the policy is known as "Average Policy".

- **Comprehensive policy**: is also known as 'all in one' policy and covers risks like fire, theft, burglary, third party risks, etc. It may also cover loss of profits during the period the business remains closed due to fire.

- **Valued policy**: is a departure from the contract of indemnity. Under it the insured can recover a fixed amount agreed to at the time the policy is taken. In the event of loss, only the fixed amount is payable, irrespective of the actual amount of loss.

- **Floating policy**: is a policy which covers loss by fire caused to property belonging to the same person but located at different places under a single sum and for one premium. Such a policy might cover goods lying in two warehouses at two different locations. This policy is always subject to 'average clause'.

- **Replacement or Re-instatement policy**: is a policy in which the insurer inserts a re-instatement clause, whereby he undertakes to pay the cost of replacement of the property damaged or destroyed by fire. Thus, he may re-instate or replace the property instead of paying cash. In such a policy, the insurer has to select one of the two alternatives, i.e. either to pay cash or to replace the property, and afterwards he cannot change to the other option.

**IAR Policy: Scope Rating & other aspects**

*The IAR Preparation Process*

*The National Project Management System and the Role of the IAR*

The National Project Management System (NPMS) is PWGSC's methodology for delivering real property projects on scope, on time, and on budget. The NPMS is intended to be a comprehensive project delivery system that assists in the management of the
project from its initial inception through to its final completion. By identifying control points and deliverables at logical steps throughout this process, the NPMS allows for the effective monitoring of progress and timely decisions concerning corrective action when needed. Complete details concerning the NPMS are available on the NPMS Web site.

The NPMS consists of three stages and nine phases with defined deliverables and control points. The three phases of the NPMS are as follows:

- The Project Inception Stage provides a "go" or a "no go" decision to proceed. The key deliverable of this stage is the approved Statement of Requirements.
- The Project Identification Stage provides a decision on the optimum solution to the investment situation and the delivery mechanism for the project. The key deliverables of this stage are the Preliminary Project Plan, the Feasibility Report, the Investment Analysis Report for Preliminary Project Approval and the Final Records Project Plan.
- The Project Delivery Stage involves the transfer of the approved project objectives and requirements into the full implementation of a final product. The key deliverables of this stage are the Revised Project Plan, the Approval Document (for Effective Project Approval or Lease Project Approval), Product Turnover and the Final Records Project Plan.

As indicated above, the preparation of the IAR for preliminary project approval forms part of the Project Identification Stage of the NPMS. In this regard, it is important to emphasize that the IAR preparation process is but one element within the integrated NPMS process. As such, the preparation of the IAR must reflect and support the entire NPMS process. The implications of this for IAR preparation include:

- Prior to writing the IAR, there should be an approved Statement of Requirements, Preliminary Project Plan and Feasibility Report already completed. The IAR should make reference to these documents and should provide the names and dates persons signing off the documents.
• The IAR should summarize the results of the other NPMS documents that have been completed; however, there is no need for duplication. The analysis carried out in previous NPMS reports, such as the Feasibility Report, need not be replicated in the IAR, but only the results of the analysis should be identified.

• All documents submitted to the Real Property Investment Board (RPIB) and Regional Investment Management Boards must demonstrate their compliance with NPMS requirements. Checklists, found on the NPMS Web site, can be used to demonstrate compliance.

• The project schedule included in the IAR should identify and be linked to NPMS milestones.

The NPMS process applies in full for the following RPB real property projects:

• Asset-based projects with a total value greater than $1.0 million, including GST or HST but excluding client costs; and

• Space-based projects involving a space requirement greater than 3,000 m² rentable (regions) or 5,000 m² rentable (NCA and Parliamentary Precinct Branch)

Smaller projects that are below the thresholds identified above can make use of a reduced NPMS process known as "NPMS Lite." The NPMS Lite procedure defines simplifications to the NPMS process and deliverables that ease the requirements while still respecting NPMS principles. More information on this procedure is available on the NPMS Web site.

**The Strategic Context for IAR Preparation**

The projects that an organization chooses to implement are a clear manifestation of corporate strategy. Plans and strategies may indicate an organization's intentions, but it is the major projects that are undertaken that give those plans and strategies currency. Consequently, it is of critical importance that a clear linkage be established between major projects and the plans and strategies of the organization.
PWGSC's program activities are expected to be aligned with the key strategic objectives of the department, which are defined through the Program Activity Architecture (PAA). The PAA is part of the government's Management Resources and Results Structure that provides a horizontal management framework across the federal government and allows enhanced reporting on performance to Parliament and central agencies. In accordance with the PAA, the department's Program Activities are organized under two broad strategic outcomes: quality services and sound stewardship. Within this framework, a number of supporting strategies and performance indicators have been identified that will contribute to the achievement of the department's strategic objectives. The most relevant to real property investment decisions include the following:

- The achievement of space volume reduction and fit-up efficiencies;
- The achievement of leasing optimization efficiencies;
- The achievement of an office space distribution ratio of 75:25 in the National Capital Area;
- Having all Occupancy Instruments comply with the Office Accommodation Framework;
- The achievement of return on investment targets for Crown-owned office buildings;
- The use of RPB risk management tools to manage the risks of real property services;
- The achievement of RPB's Sustainable Development Strategy targets;
- The attainment of LEED Gold standard in new buildings, and satisfy the BOMABEST (formerly BOMA Go Green Plus) assessment for existing buildings and leases;
- The reduction of energy consumption in Crown-owned buildings;
- The remediation of contaminated sites; and
- The implementation of projects included in the National Portfolio Plan (NPP).

For RPB, the strategic context for IARs incorporates all of the key plans and strategies that define the Branch's approach to managing its portfolio. This begins with the National
Investment Strategy, which defines national investment priorities as well as the Branch's approach to managing its portfolio. Other key strategic documents include:

- Community-Based Investment Strategies (CBIS), which identify community-level issues, priorities and plans;
- Strategic Action Plans (SAP), which identifies local investment priorities;
- Regional Investment Strategies, which define regional investment priorities;
- Asset Management Plans (AMPs), which recommends a management strategy for an individual asset;
- Sustainable Development Strategy (SDS), which sets out the departmental approach to sustainable development.
- The Way Forward Initiative, which seeks cost reductions through more rigorous application of Office Accommodation Framework (OAF) space and fit-up standards and a more strategic approach to leasing; and
- The BMP Annual Call Letter, which provides instructions for the preparation of Building Management Plans (BMPs), also provides vital information on national objectives and priorities, as well as information on how national programs should be reflected in the planning for individual buildings.

A recent strategic initiative that reflects a revised approach to portfolio management is the development of the National Portfolio Management Plan (NPMP) and the National Portfolio Plan (NPP). The NPMP is national portfolio-based approaches to strategic planning that recognizes the issues and challenges of the current portfolio and seeks to put in place the tools and methodologies to bring about change. The underlying theme is the migration of the portfolio from its current state to a desired state. The desired state of a portfolio reflects a vision of a flexible, responsive and synchronized portfolio that meets the short and long term needs of the government's program objectives in such a way as to provide best value and to allow program dollars to be used for their intended purpose. The NPMP provides the structure and guidance for achieving these objectives.

Underlying the NPMP is the recognition that the ultimate objective for the portfolio is not necessarily to own buildings, but rather to provide good, efficient accommodation at an
affordable cost to the federal government. This may require new ways of doing business and managing the portfolio. Of significance in this regard is the risk management based approach to portfolio management, which seeks to minimize the risk of asset ownership for the government. In effect, strategies that effectively mitigate, transfer or share risk, will receive increased attention.

The National Portfolio Plan (NPP) flows from the NPMP. The NPP provides an action plan for what will be done within the portfolio to implement the NPMP. It includes an optimal set of priority projects, listed by asset category to match supply to demand over the next 5 years. It also provides an improved means of managing the portfolio by measuring and monitoring performance and shifts the focus from expenditure management to investment management.

In 2009, PWGSC is preparing the department's first Investment Plan, which conforms to the requirements of the new TB Policy on Investment Planning - Assets and Acquired Services. The Investment Plan will replace the National Investment Strategy (NIS) and demonstrate how PWGSC intends to create and manage a portfolio of custodial, accessed assets and acquired services. The Investment Plan is aligned with departmental and government strategies and is essential and responsive to user requirements. Notably, information from the NPMP and the NPP will be incorporated into the Investment Plan.

A key component of the NPP is its ability to triage, prioritize and measure the portfolio. The methodology for doing so is known as the "Tiering Tool." Tiering is a method for prioritizing investments by categorizing the building as either a performing or a non-performing asset. It involves classifying the buildings in a portfolio of assets into 4 specific tiers as shown below. Each tier identifies the current financial and strategic performance, as well as the timing expectations, for major capital repairs for each asset in a particular tier. Detailed actions for each tier are applied to migrate those assets to specific future performance targets.
- Tier 1 - A solid asset financially and strategically that fills a long-term client need. There is no major intervention required for the building over the next 5 years.
- Tier 2 - An asset with good financial and strategic performance. Demand is relatively stable. Major intervention may be required, but can be delayed for 5 years.
- Tier 3 - An asset with weaker financial and strategic performance. Major intervention is required within 5 years.
- Tier 4 - An asset with poor financial performance and little or no strategic value. Requires major expenditure.

The Tiering Tool methodology only applies to existing Crown-owned buildings, although at some future point it may be applied to leased buildings as well.

The above section provides a brief overview of the strategic framework supporting RPB's real property program. It is important for the investment analyst to fully understand the policies and strategies of the Branch in order to develop projects that reflect strategic priorities and are designed to conform to RPB policies. Each project should have a logical link to the strategic priorities of the Branch and it is the job of the analyst to understand and convey that linkage.

**Preparing an IAR**

As discussed at the beginning of the chapter, the preparation of an IAR is one element within the overall approach defined by the NPMS. Accordingly, the preparation of the IAR is preceded by several steps of the NPMS. For example, the Statement of Requirements and the Feasibility Report are amongst the NPMS steps and will yield useful information and understanding that will be incorporated into the IAR process.

Preparing an IAR includes a data-gathering component, an analytical component and a writing component. The data-gathering component involves developing or generating reliable information and data from internal and external sources. Good data is a prerequisite for a meaningful and valid analysis and is gathered and facilitated by having
the appropriate people with the necessary knowledge and skills as part of the IAR team. Obtaining the necessary information can be effectively done by engaging external expertise early in the process, needed to generate design and cost information. The analytical component involves the evaluation of project requirements and the corresponding options and actions in order to meet those requirements. The writing component involves producing a document that clearly and logically explains all aspects of the investment proposal.

The analytical component of the IAR, or the investment analysis, involves a series of techniques for analyzing relevant information concerning future costs and benefits related to a project. The investment analysis process can be considered as a series of logical steps that carries the analyst through the thought processes necessary to arrive at a fully supportable conclusion. This process, known as the eight steps of investment analysis, is described in detail in Appendix A of this Guide, and is briefly summarized as follows:

1. Define scope - identify and document project or client requirements. Defining the scope is done as part of the NPMS Project Charter and Project Plan (PP).
2. Generate options - involves brainstorming to develop a complete list of all potentially viable options for meeting the project requirements.
3. Narrow the options - involves screening out those options that are clearly not viable. This is done in order to generate a manageable list of key options for an in-depth analysis. Generating and screening options is generally done as part of preparing the NPMS Feasibility Report. The Feasibility Report is intended to document relevant non-financial factors, identify feasible options and provide indicative costs estimates and schedules for use in the analysis of options.
4. Undertake financial analysis - determine the financial viability of the main options through a discounted cash flow analysis using PWGSC's REFIT program and by conducting a sensitivity analysis.
5. Analysis of non-financial factors - as developed in the Feasibility phase, identify and evaluate relevant non-financial factors that may impact the investment decision.
6. Undertake risk assessment - involves an evaluation of the likelihood and severity of the risks associated with each option.

7. Analysis phase - Evaluate options by combining the assessments of financial factors, non-financial factors and risk to draw overall conclusions concerning the investment decision and which option provides the best overall value to the federal government.

8. Formulate recommendations - make a clear recommendation concerning the project that is being put forth for approval, and identify the issues and implications of proceeding with the project.

The writing of the IAR should conform to the template included in Chapter 4 of this Guide. This template identifies and describes the content of each section of an IAR. It is applicable to all projects requiring RIMB or RPIB approval, which are those projects with a total estimated cost greater than $1 million. It also applies to both asset-based and space-based projects.

Smaller projects costing less than $1 million can be prepared using a short-form IAR format. The short-form IAR format is intended to provide for the complete analysis and justification of a project, but in a shorter document that is less onerous to prepare. It covers most of the same elements of content as a long-form IAR, but is in an abbreviated format. The short-form IAR makes use of standardized information templates to reduce the document length and to ease the task of writing. Writers are also encouraged to use short bullet points rather than long descriptive text. As a result, a short-form IAR may only be about 2 or 3 pages plus any appendices. A national template is available for preparing short-form IARs. Please note, several regions have developed their own templates.

**Warranties and their importance**

Warranties can be complicated but it is vital that businesses are aware of any warranties in place that could invalidate a claim. It could mean the difference between a claim being paid and your company going out of business. Similarly, if a contractor is working on your premises, it’s also important to ensure that they are complying with their warranties
and conditions should they become liable for any damage or an accident. Contact your local insurance broker if you are unsure as to whether you have any warranties in place on your current policies and need further advice.

An assurance, promise, or guaranty by one party that a particular statement of fact is true and may be relied upon by the other party.

Warranties are used in a variety of commercial situations. In many instances a business may voluntarily make a warranty. In other situations the law implies a warranty where no express warranty was made. Most warranties are made with respect to real estate, insurance, and sales and leases of goods and services.

A warranty in an insurance policy is a promise by the insured party that statements affecting the validity of the contract are true. Most insurance contracts require the insured to make certain warranties. For example, to obtain a Health Insurance policy, an insured party may have to warrant that he does not suffer from a terminal disease. If a warranty made by an insured party turns out to be untrue, the insurer may cancel the policy and refuse to cover claims.

Not all misstatements made by an insured party give the insurer the right to cancel a policy or refuse a claim. Only misrepresentations on conditions and warranties in the contract give an insurer such rights. To qualify as a condition or warranty, the statement must be expressly included in the contract, and the provision must clearly show that the parties intended that the rights of the insured and insurer would depend on the truth of the statement.

Warranties in insurance contracts can be divided into two types: affirmative or promissory. An affirmative warranty is a statement regarding a fact at the time the contract was made. A promissory warranty is a statement about future facts or about facts that will continue to be true throughout the term of the policy. An untruthful affirmative warranty makes an insurance contract void at its inception. If a promissory warranty becomes true, the insurer may cancel coverage at such time as the warranty becomes untrue. For example, if an insured party warrants that property to be covered by a fire
insurance policy will never be used for the mixing of explosives, the insurer may cancel
the policy if the insured party decides to start mixing explosives on the property.
Warranty provisions should contain language indicating whether they are affirmative or
promissory.

Many states have created laws that protect insured’s from cancellations due to
misrepresented warranties. Courts tend to favor insured’s by classifying indefinite
warranties as affirmative. Many state legislatures have created laws providing that no
misrepresented warranty should cancel an insurance contract if the Misrepresentation was
not fraudulent and did not increase the risks covered by the policy.

**Underwriting Aspects and applications**

Insurance is protection against future financial loss from injury, illness, property damage,
or liability for the losses of others. INSURANCE UNDERWRITERS review
applications for insurance coverage submitted to the company. They evaluate the
potential risk, and accept, reject, or modify the policy according to law or company
standards. Some Underwriters work for life or health insurance companies and usually
specialize in either individual or group policies. Others are employed in the property and
liability field; they typically handle either personal insurance, such as automobile or
homeowner policies, or commercial insurance.

Before deciding whether to accept or reject a policy, Underwriters investigate the factors
affecting the probability of loss. They analyze information on the policy application and
collect additional data. Life and health Insurance Underwriters study medical reports and
also obtain detailed information about the applicant's occupation and involvement with
hazardous sports or other risky activities. In addition, they apply actuarial tables which
give the statistical probability of loss based on actual experience of large groups of
people over many years. Underwriters dealing with automobile insurance check an
applicant's driving record and customary use of the vehicle. For business property and
liability policies, commercial Underwriters look into many aspects of a firm's operation;
these include the physical condition of the property, protective devices and safety
procedures used, and reports of safety inspections made by company loss control
technicians or by independent inspection services. Underwriters in all fields of insurance
also study credit reports and financial statements to determine the applicant's ability to make the insurance payments. During the review of renewal policies, they check the policyholder's claims record and may revise the amount of coverage.

After deciding that an applicant is an acceptable risk, underwriters usually determine the amount of the premium. Rates may be set according to standardized classifications published in rate manuals, or revised to reflect individual or group risk variations. Underwriters may also limit the coverage or modify other terms of the contract. Underwriters frequently correspond with applicants, policyholders, agents, and branch managers about policy cancellations or requests for information. Some group Underwriters, along with Insurance Agents, attends meetings with union or employer representatives to discuss the types of policies available to their groups.

Fire underwriting is a discipline with a strong tradition. Because of the long history of the FOC (Fire Offices' Committee), to which most of the leading fire offices belonged, and the 120-odd years of its Tariff, there is a coherence to fire underwriting thought which runs virtually across the industry. The unity is much greater than one would find, say, in liability insurance or personal accident and applies even to those offices which were non-Tariff, since they were strongly influenced by its existence. Although proclaiming independence, many would follow the same rating structure, and might even be in possession of under-the-counter copies of the Tariff itself. The Tariff, which was finally abolished in mid-1985, comprised asset of basic rates, on a trade or industry basis. To these, various adjustments were prescribed according to the particular features of a risk, and the warranties which an insured was prepared to undertake. The schedules were based more on underwriting 'feel' than exact science, but nevertheless incorporated many years of business experience. As a result, at the overall level, the Tariff was successful in prescribing premium rates that gave offices a very adequate level of profitability. But it was not always so satisfactory in terms of fine tuning, and some problems were experienced with the system as the 20th Century progressed into its later years.
These problems related mainly to the lack of flexibility of the Tariff. The industrial scene was changing, and the effort of incorporating whole new industries into the structure proved too great. The commercial market was changing with such rapidity that there was no hope of keeping the Tariff rates up to date, other than by a crude system of overall adjustments. Most important of all, commercial fire became very competitive. Offices would have to fight at each renewal to retain their business. Even those which were FOC-diehards had to permit exceptions to Tariff ratings, or lose substantial premium income.

The underwriter's aim is to take on risks, but only those he would regard as "reasonable". When a proposal comes in, he will look for any bad features present, and place each on a scale of ascending severity. If the features are minor ones, he may ignore them, or introduce a small loading to the premium, and so on up the scale as the severity increases. But eventually he will reach a point where the hazard is so great that he feels that the risk is not commercially viable to his company. By the law of averages, ultimately, there will be a loss which is far greater than the premiums paid.

To put the point in figures, if there is a 100% chance of a total loss within 10 years, or a 10% chance of such a loss in any one year, and then the risk is considered to be quite beyond the pale. Insurers will generally not wish to charge more than say 2% as a premium in the property market. A risk, then, may be uninsurable as it stands. The question is, can it be improved so as to ring the premium rate down to the "reasonable" level? If so, then terms may be offered, and a contract negotiated. The classical answer is to have sprinklers put in, and then reduces the effective rate by 50% or more. But there are aspects of risk more difficult and perhaps impossible to deal with. Moral risk is the prime example

As a means of control on poor risks that are acceptable, the underwriter will frequently impose a lower acceptance limit than normal. That is, he will restrict the amount of cover given. Consequently, a poor risk is more likely to need co-insurance, with a number of companies each underwriting a proportion only of the sum insured. In such cases, the influence of a competent broker with good market contacts may be essential to the placement of the risk. The key, perhaps, lies in the proposer's attitudes -if these are
acceptable, then attempts will be made to take part of the risk by the underwriters concerned.

Traditionally underwriters ignore investment income and work in terms of underwriting profit. There are good reasons for this. For example, in a large organization with many branches involved in underwriting, clear instructions have to be given to the staff. To them, the term "underwriting profit" will have a direct and simple meaning, and will help to guide the course of their work. Staff would not fully understand the concept of "insurance profit", nor how it is arrived at by an actuary. Hence direction and momentum will be lost, and with them, perhaps the chance of making any profit at all.

If premium income can be expected to cover claims, expenses and a margin for profit, then investment income may be used for building up the reserves. This strengthening is particularly desirable under modern conditions, so that solvency margins can be maintained at an adequate level as the business grows. Also, as time goes by, the individual risks are tending to become much larger in size, so that a stronger capital base is needed in order to give the proper cover.

For the underwriter the most important point of all is that while there is one truth to be found in statistics, there is another to be found in the market place. Market conditions heavily influence general insurance rates and the fire underwriter disregards them at his peril. Competitive pressures give rise to the underwriting cycle, a phenomenon which can be described in classical economic terms. In the early 1970's, there was a hardening market, reaching its peak in 1972/73. Premium rates were relatively high, and good underwriting profits could be made. New companies were attracted to enter the market and established ones increased their capacity for business. Soon the market was overprovided, competition intensified and premium rates began to fall. This led to a protracted soft market in the later 1970's and early 1980's. By the end of the period many companies were suffering substantial losses. Some reduced their capacity, while others left the market altogether. This led to the opposite aspect of the cycle, and in 1984/85 the hard market reasserted itself. Premium rates were restored to higher levels relative to risk, and those companies left in the market returned towards a position of underwriting profit.
A significant aspect of the recent hardening of the market has been the drastic reduction in reinsurance capacity. This feature has particularly hit the smaller companies, and largely destroyed their ability to undercut the bigger, better established offices. Thus, in the soft market, a small company could write large tranches of business far beyond its own capacity, imply by reinsuring the greater part away - in some cases 95% and more. That option is no longer open today.

There is a corollary to be drawn from the underwriting cycle. It is that, in the soft years, an office may deliberately take or retain business, knowing that the rate set is not a profitable one. This is because it has a feel for the cycle, and wishes to keep the business on its books for the hard years which are likely to follow. The aim is to make a good profit in the longer term, and not just for the current year in isolation. Even so, the prudent underwriter will have some lower rating limit in mind, below which he will not be prepared to go in the competitive scramble.

**Special Condition: Special Conditions to Section I**

1. **Sums Insured**
   
   It is a requirement of this Insurance that the sums insured stated in the Schedule shall not be less than the cost of reinstatement as if such property (except for stocks) were reinstated on the first day of the Period of Insurance which shall mean the cost of replacement of the insured items by new items in a condition equal to but not better or more extensive than its condition when new.

2. **Basis of Loss Settlement**
   
   In the event of any loss destruction or damage the indemnification under this section shall be calculated on the basis of the reinstatement or replacement of the property lost destroyed or damaged, subject to the following provisions:

   2.1. **Reinstatement or replacement shall mean:**
   
   1. Where property is lost or destroyed, the rebuilding of any buildings or the replacement of any other property by similar property, in either case in a condition equal to but not better or more extensive than its condition when new.
2. Where property is damaged, the repair of the damage and the restoration of the damaged portion of the property to a condition substantially the same as but not better or more extensive than its condition when new.

2.2. Special Provisions

1. The work of reinstatement (which may be carried out upon another site and in any manner suitable to the requirements of the Insured subject to the liability of the Insurers not being thereby increased) must be commenced and carried out within 12 months after the destruction or damage otherwise no payment beyond the amount which would have been payable under the policy if this special provisions had not been incorporated herein shall be made.

2. Where any property is lost destroyed or damaged in part only the liability of the Insurers shall not exceed the sum representing the cost which the Insurers could have been called upon to pay for reinstatement if such property had been wholly destroyed.

3. Until the cost of reinstatement or replacement shall have been actually incurred the amount payable under each of the items shall be calculated on the basis of the actual cash value of such items immediately before the loss destruction or damage with due allowance for depreciation for age use and condition.

Special Exclusions to Section II:

1. This Policy does not cover loss resulting from interruption of or interference with the business directly or indirectly attributable to

1.1. Any restrictions on reconstruction or operation imposed by any public authority

1.2. The Insured's lack of sufficient capital for timely restoration or replacement of property lost destroyed or damaged

1.3. Loss of business due to causes such as suspension lapse or cancellation of a lease license or order etc. which occurs after the date when the items lost destroyed or damaged are again in operating condition and the business could have been resumed, if said lease license order etc. had not lapsed or had not been suspended or cancelled.
1.4. Damage to boilers, economizers, turbines or other vessels, machinery or apparatus in which pressure is used or their contents resulting from their explosion or rupture.

1.5. Electronic installations, computers, and data processing equipment.

1.6. Damage resulting from:

a) Deliberate erasure, loss, distortion, or corruption of information on computer systems or other records programs or software.

b) Other erasure, loss, distortion, or corruption of information on computer systems or other records programs or software unless resulting from fire, lightning, explosion, aircraft, impact by any road vehicle or animals, earthquake, hurricane, windstorm, flood, bursting of water tanks, apparatus, or pipes, or in so far as it is not otherwise excluded, unless caused by damage to the machine or apparatus in which the records are mounted.

1.7. Mechanical or electrical breakdown or derangement of machinery or equipment.

**Rating of Fire Risks**

An **Industrial fire** is a type of industrial disaster involving a conflagration which occurs in an industrial setting. Industrial fires often, but not always, occur together with explosions. They are most likely to occur in facilities where there is a lot of flammable material present. Such material can include petroleum, petroleum products such as petrochemicals, or natural gas. Processing flammable materials such as hydrocarbons in units at high temperature and/or high pressure makes the hazards more severe. Facilities with such combustible material include oil refineries, tank farms (oil depots), natural gas processing plants, and chemical plants, particularly petrochemical plants. Such facilities often have their own fire departments for firefighting. Sometimes large amounts of dust or powder are vulnerable to combustion and their ignition can cause dust explosions. Severe industrial fires have involved multiple injuries, loss of life, costly financial loss, and/or damage to the surrounding community or environment.

Process Hazard Analysis (PHA) is a set of organized and systematic assessments of the potential hazards for an industrial process used to analyze potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals, and major spills of hazardous chemicals.
Fire and explosion can result in catastrophic consequences, causing serious injuries or death of workers and others, as well as significant damage to property. A person conducting a business or undertaking (PCBU) must prevent the possibility of fire or explosion from an ignition of flammable substances associated with a hazardous area or a hazardous atmosphere.

**Safety duties**

Requires specific controls for prevention of fire and explosion associated with hazardous chemicals. A PCBU must ensure an ignition source is not introduced into a hazardous area (from outside or within the space).

Section 52 of the WHS Regulation requires a PCBU to manage risks to health and safety associated with an ignition source in a hazardous atmosphere. With respect to flammable substances, a hazardous atmosphere is an atmosphere where the concentration of flammable gas, vapor, mist, or fumes exceeds 5% of the lower explosive limit (LEL) for the substance. The LEL is equivalent to the lower flammability limit or LFL and may be found in Section 9 Physical and chemical properties in a product’s safety data sheet.

**Hazardous areas**

A hazardous area is an area (three-dimensional space) in which a flammable atmosphere is or may be expected to be present, and require special precautions for the construction, installation and use of equipment. Examples of hazardous areas are:

- flammable liquid and gas storage tanks and associated equipment (e.g. release points such as vents, fill points, dip points, safety relief devices)
- flammable liquid and gas dispensing equipment (e.g. service stations, depots and airports, LP gas filling stations)
- storage areas for flammable liquids in packages (e.g. warehouses, store rooms, workshops)
- storage areas for flammable gases in cylinders
- mixing and blending vessels for flammable product formulations road and rail tanker loading facilities for flammable liquids and gases
- fume cupboards used for flammable liquids and gases
- laboratory areas where flammable liquids are used and stored
- spray painting booths used for flammable paints and lacquers
- landfill gas (e.g. methane), sewage treatment and sewage pumping plants
- flammable solvent printing processes
- accidental puncturing and spilling contents of containers containing flammable liquids
- application of flammable sealants and adhesives in enclosed areas
- areas around activities generating fine dusts of combustible material (sugar, grain, polymers, dry organic residues).

Wherever flammable liquids, vapors, and gases, and combustible dusts are generated, used, stored and handled, a hazardous area assessment should be conducted to determine the extent of applicable exclusion zones for potential ignition sources. Exclusion zones are divided into zone 0, 1, or 2 based on the probability of a flammable atmosphere being present as follows:

- Zone 0 hazardous area is an area where a flammable atmosphere is present continuously or for long periods or frequently
- Zone 1 hazardous area is an area where a flammable atmosphere is likely to occur in normal operation occasionally
- Zone 2 hazardous area is an area where a flammable atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.

Once hazardous areas and applicable zones are identified, potential ignition sources can be identified and either eliminated or controlled to prevent a fire or explosion. An ignition source provides a source of energy sufficient to ignite a flammable atmosphere. Examples of ignition sources include:

- naked flames, smoking, pilot lights
- portable electrical equipment such as tools, radios, and fans
- fixed electrical systems and powered circuits with potential for arcs, sparks, short circuits
- hot work activities such as welding, hot-cutting, grinding (can throw hot metal shavings considerable distances)
- operating equipment with combustion engines such as forklift trucks, generators, compressors
- hot surfaces, exhaust pipes, hot flues and ducts and frictional heating
- mechanical sparks from impacts, e.g. lawn mower blades striking a rock, forklift types on concrete
- static electricity leading to electrostatic discharges generated incidentally or by processes or activities including:
  - low conductivity liquids, e.g. liquid hydrocarbons, flowing at high velocity through pipes and associated fittings
  - flow of powdered or granular solid materials (particularly non-conducting materials like plastic beads), e.g. moving through shuts and hoppers, and mixing and sieving
  - non-conducting drive or conveyor belts in motion
  - Movement of people when insulated from earth, particularly if wearing clothing of synthetic fibers.

**Risk control measures**

Key control measures for managing these risks include:
- identifying and managing hazardous areas
- controlling emissions of flammable vapors, gases and mists
- use of ventilation systems to control vapors during both normal and abnormal conditions (e.g. leak or spill)
- eliminating ignition sources from hazardous areas
- installing systems to detect leaks of flammable gases or vapors and enable response actions to be taken
- using intrinsically safe or flameproof equipment
- substituting flammable materials for ones that are less flammable or combustible
- ensuring incompatible materials (e.g. oxidizers and oils) are separated or segregated
- reducing quantities of flammable and combustible materials, including items that contribute to the fire load but that are not hazardous chemicals themselves (e.g. wooden pallets, oil)
- ensuring equipment used in handling flammable hazardous chemicals is maintained in accordance with manufacturer's instructions
Adopting good housekeeping practices to minimize accumulation of combustible dusts.

**Controlling flammable substance emissions**

Accumulation of vapors, gases, mists creates the potential for a hazardous area to exist. Vapor emissions resulting from processes can be minimized by:

- the use of enclosed container and transfer systems and vapor recovery connections
- keeping lids open only for the minimum period required for transfer
- minimizing exposed surface areas (e.g. area of spread for leaked or spilled liquid)
- avoidance of splash filling
- minimizing the temperature of liquids being processed or transferred
- Providing ventilation, e.g. mechanical extraction for all sources of vapor and vent to a safe area.

When heated, the vapor pressure of flammable and combustible materials may increase resulting in higher vapor emissions. Containers of hazardous chemicals should therefore be stored away from sources of heat (e.g. heaters or other heating appliances). Heat may also deteriorate packaging and increase the risk of failure of the container and product loss. Hot surfaces may also exceed a substance’s auto-ignition temperature.

**Controlling ignition sources**

Controlling potential sources of ignition in a hazardous area may be achieved by:

- use of suitably-rated electrical equipment (e.g. intrinsically safe or flame-proof)
- ensuring electrical equipment is effectively maintained where poorly maintained electrical equipment can present a significant risk for example through worn brushes
- ensuring electrical equipment is properly earthed
- ensuring the auto-ignition temperature of the hazardous chemical is considered as some hazardous chemicals may ignite spontaneously above certain temperatures
- Implementing administrative controls such as permit systems preventing hot work (for example, welding) in these areas (see below).

Where electrical installations or equipment are required to be located or used in a hazardous area e.g. lighting, mixers and stirrers, pumps, control systems, forklift trucks,
detectors, torches etc, these items must be designed and constructed so that they cannot release energy within the hazardous area that is sufficient to cause an ignition. That is, such equipment must be suitably rated for use in a hazardous area.

Such design and construction techniques include 'intrinsically safe' or 'flame-proof/encapsulated' equipment. Any equipment designed and constructed to operate within a hazardous area must also be supplied with documentation stating which zone (i.e. 0, 1 or 2) it is suitable to operate within.

It is a PCBU's duty to ensure equipment within a hazardous area is consistent with the zone assigned to the area, i.e., zone 1 rated equipment must only permitted within a zone 1 hazardous area. However, zone 1 or zone 2 equipment is permitted within a zone 2 hazardous areas as zone 1 equipment is more conservative than zone 2.

Safe work procedures must also account for any hazardous areas. For example adopting a hot work permit system to conduct maintenance and repair activities.

**Controlling static electricity**

Static electricity can be created from a range of activities including the transfer of hazardous chemicals. Information on control of static electricity can be found in AS1020: *The control of undesirable static electricity* and includes methods such as earthing and bonding to ensure any build-up of static electricity is dissipated before a hazardous electrical discharge can occur.

**Controlling hot work**

Hot work is any process involving grinding, welding, brazing, oxy cutting, heat treatment or any other similar process that generates heat or continuous streams of sparks. Undertaking hot work in areas where flammable or combustible chemicals or other materials are present creates a significant risk of fire or explosion. Conducting hot work on containers such as drums, tanks and pipes that have not been properly decontaminated is a common cause of serious incidents. A hot work permit system is a system designed to eliminate or minimize risks from these activities by controlling when and how hot work is undertaken in these areas.
Fixing of Sum Insured for Various Subject Matters

The sum insured is an extremely important aspect of a contract of insurance and it has been seen from experience that more often than not the sum insured is not fixed on a proper basis. In most of the claims, where proper indemnity could have been given had the sum insured been adequate, the losses stand proportionately reduced because of under insurance. Adequacy of the sum insured is important from the point of view of all concerned - the insured, the insurer, the surveyor and the bank or financial institution who may have an interest in the subject matter of insurance.

IMPORTANCE OF FIXING PROPER SUM INSURED

Before we look into the subject of fixing proper sum insured, let us see how the contract of insurance operates. A contract of insurance is defined as "a contract whereby one party, called the Insurer, in consideration of premium paid by another party, called the Insured, agrees to indemnify the latter in the event of loss or damage to the subject matter of insurance due to any of the insured perils as per the terms and conditions of the policy.

In the case of a Fire Insurance contract, the sum insured should be adequate, because the policy provides for an Average Clause whereby the assessed claim is reduced in proportion to the under-insurance. The average clause is reproduced below:

If the property hereby insured shall at the breaking out of any insured peril be collectively of greater than the sum insured thereon, then the insured shall be considered as being his own insurer for the difference for the difference, and shall bear a ratable proportion of the loss accordingly. Every item, if more than one, of the policy shall be separately subject to the condition.

Since the purpose of the insurance is to place the insured in the same financial position in which he was at the time of loss, it is necessary that there should be no under-insurance and the sum insured be adequate.

Fixing of adequate sum insured is also important from the point of view of the banks or financial institutions that may have advanced money on the security of the insured property. It is sometimes found that the banks or financial institutions do not concern
themselves with the adequacy of the sum insured so long as it is sufficient to cover the money advanced by them or at best the full value of the property on which they have advanced money. Invariably in such cases they find the problem only after happening of a loss when the claim amount is suitably adjusted for underinsurance and the full indemnity is not available due to the inadequacy of the sum insured.

FIRE MATERIAL DAMAGE POLICIES – SUM INSURED
The sum insured is always fixed by the proposer. It is the limit of Insurer’s liability under a policy. It is the amount on which the rate is applied to determine the premium payable for the insurance. The sum insured should represent the actual value of the property to be insured. Insuring for higher value than the actual value gives no advantage to the insured as payment of claims, if, any, is subject to the principle of indemnity. Insuring for value lesser than the actual value makes the insured self insurer for the difference and claim, if any, is subjected to ‘average’ clause whereby he is penalized for under-insurance.
In case of joint ownership of any property, the insured can get the claim only in respect of is share. He could, however, insure full value of the property on behalf of other co-owners as well which case the claim, if any, is paid to each co-owner to the extent of their insurable interest.
It is, therefore, important to determine the sum to be insured very carefully. It is suggested that this should be based on each of various items i.e. building, plant, machinery, contents, etc.

BUILDINGS
For insurance of building one has to take into account various factors and ensure that the value of the land is excluded since the land cannot be damaged by fire or allied perils. The plinth and foundations normally do not get damaged but in the event of a series fire, they can be so affected as to require re-doing. The present day value of plinth and foundations is substantial and therefore if the intention is to insure its value, it is suggested that this must be separately declared. In case the intention is not to insure plinth and foundations against fire and allied perils it may still be considered for insurance ageist ‘earthquake fire and shock ‘ risks for which there is a suitable provision
for insuring these a separate item without corresponding insurance against fire perils. In other words, the sum insured against earthquake risk on that portion of the building above the ground level will be same as the sum insured under fire policy but the plinth and foundations will be insured under a separate item if it is desired to be included against earthquake peril. The value of the building should be computed taking into account the cost of floors, walls, roofs/false roofs/ceilings and value of such items which may be embedded underground or in the walls/roofs which such become integral part of the building. The intention of including such items must be clarified by suitable description in the policy itself in order to avoid any future confusion/misunderstanding. Examples of items which embedded underground or in walls/roofs are:

Pipes

Electric and telephone wirings or other items used for special purpose.

VALUATION

Buildings are usually insured on one of the following bases by the insured:

Original Cost
Book Value
Market Value

Reinstatement Value and the sum insured for each basis will obviously differ.

ORIGINAL COST

Every new building has its original cost at which it has been acquired and is atleast relevant during the first year of its insurance. For old buildings the original cost has no relevance to its value for insurance purpose since it is subject to depreciation due to its age and also appreciation in value due to inflation.

BOOK VALUE

Book value of a property has no relation to insurable value except in the case of new building in its first year of insurance. In the subsequent years, the book value continues to be brought down by depreciation and as such it does not represent market value or the value of similar new property.
MARKET VALUE

This is determined by the amount at which property of the same age and condition can be bought and sold. This value takes into account both depreciation due to age and appreciation due to inflation. For determining the sum insured for buildings, apart from excluding the value of land and plinth, the present cost of construction of similar building should be taken and then the depreciation for age and usage deducted.

REINSTATEMENT VALUE

This means the value of similar new property. In fire insurance the principle of indemnity can be modified in the case of building, machinery and other fixed assets whereby, subject to the sum insured representing the value of similar new property, it can be insured under ‘Reinstatement Value’ clause. In case of reinstatement value policy, the basis of loss settlement is the value of new property without taking any depreciation into account. This type of insurance enables the owner to replace his property without any financial strain on his own resources and is quite commonly taken by industrialists and building owners.

Each building has a definite built up area and ascertainable constructional specification. Any civil engineer or architect can examine the current cost construction, keeping all relevant factors in view. For arriving at the cost of buildings, various publications such as CPWD rates are available as guideline. In case of old buildings if an escalation method is to be made use of, the cost of rise indices published by the National Buildings Organization should be referred to for arriving at present value for insurance purposed. Depreciation in the case of building is to be adjusted from the estimated current replacement cost. Calculation of depreciation may vary considerably and therefore each individual building will require fixation of depreciation on merit taking various features, interalia construction, occupancy (some occupancies generating heat/vibration will require higher rates of depreciation), degree and standard of maintenance. It is therefore, very difficult to have a fixed formula and yet merely as a rough guideline the following range could give some indication.
### CHECK LIST

#### A.1 Check if the following values included or excluded:

| i) Land value (It should not be included since it cannot be damaged by fire.) | Yes/No |
| ii) Foundation/Plinth (Not to be included for fire peril but may be shown as a separate item in case earthquake fire and shock peril is taken.) | Yes/No |
| iii) Underground assets (May be included since they may get damaged in case of a serious fire and also liable for damage due to flood, inundation, earthquake fire and shock. If included, it should be so described in the Policy.) | Yes/No |
| iv) Assets embedded in walls, roofs, floors (These should be included and so described in the Policy.) | Yes/No |
| v) Road and Pavement | Yes/No |
| vi) Boundary walls and fences | Yes/No |
| vii) Utility Buildings (Should be included and so described in the Policy) | Yes/No |

#### A.2 Check the basis of valuation

| i) Original Cost | These will result in under insurance |
| ii) Book Value | |
| iii) Market Value of similar property | Correct basis for taking standard fire policy |
| iv) Reinstatement Value (value of similar new property) | Correct basis for taking policy with Reinstatement Value Clause |

*Note: A monthly, quarterly or semi-annual revision in values is recommended.*

#### B.1 Check if the following included:

| i) All items of Plant and Machinery including electrical items | Yes/No |
### ii) Standby Machinery not in use

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
</table>

### iii) Tools and spares on shop floors or in stores/godown

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
</table>

### iv) Transformers and distribution system (if owned, it must be insured, otherwise can be insured on behalf of the Electricity Board Concerned)

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
</table>

### B.2 Check the basis of valuation:

<table>
<thead>
<tr>
<th>Basis of Valuation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Original Cost</td>
<td>These will result in under insurance</td>
</tr>
<tr>
<td>ii) Book Value</td>
<td></td>
</tr>
<tr>
<td>iii) Market Value of similar property</td>
<td>Correct basis for taking standard fire policy</td>
</tr>
<tr>
<td>iv) Reinstatement Value (value of similar new property)</td>
<td>Correct basis for taking policy with Reinstatement Value Clause</td>
</tr>
</tbody>
</table>

**Note:** Periodical revision in value is recommended.

### B.3 For Imported machinery check the following:

<table>
<thead>
<tr>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Inflation in the country of origin</td>
</tr>
<tr>
<td>ii) Change in custom duty</td>
</tr>
<tr>
<td>iii) Currency fluctuation</td>
</tr>
</tbody>
</table>

### Check if following have been included

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Materials</td>
<td></td>
</tr>
<tr>
<td>In Godowns</td>
<td></td>
</tr>
<tr>
<td>In Open</td>
<td></td>
</tr>
<tr>
<td>On the Shop Floor</td>
<td></td>
</tr>
<tr>
<td>In bonded Warehouse</td>
<td></td>
</tr>
</tbody>
</table>

| Finished Goods |
| In Factory |
| In finishing/packing Department |
| In Open |
| In Godowns |
| In Bonded Warehouse |

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
</table>

**Note:** Periodical revision in value is recommended.
iii) Stock –in-process (Care may taken to estimate maximum value at each location)  Yes/No

iv) Wastes  Yes/No

<table>
<thead>
<tr>
<th>Has escalation clause been taken for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Anticipated inflation during policy period for buildings and plant &amp; machinery  Yes/No</td>
</tr>
<tr>
<td>ii) Declaration facilities for stocks  Yes/No</td>
</tr>
<tr>
<td>iii) Removal of Debris for Buildings and Machinery  Yes/No</td>
</tr>
<tr>
<td>iv) Spoilage cover for stock in process  Yes/No</td>
</tr>
<tr>
<td>v) Omission to insure addition etc for building and machinery  Yes/No</td>
</tr>
<tr>
<td>vi) Other additional covers that may be added to fire policy, such as insurance of rent etc  Yes/No</td>
</tr>
</tbody>
</table>

The sum insured is an extremely important aspect of a contract of insurance and it has been seen from experience that more often than not the sum insured is not fixed on a proper basis. In most of the claims, where proper indemnity could have been given had the sum insured been adequate, the losses stand proportionately reduced because of under-insurance. Adequacy of the sum insured is important from the point of view of all concerned – the insured, the insurer, the surveyor and the bank or financial institution who may have an interest in the subject matter of insurance. Students of insurance also must have full understanding of this important subject. It is, therefore, felt that all interested in insurance would benefit by this report, which looks into the “sum insured” from various angles, keeping in view its impact on different interests.

**Importance of fixing proper sum insured**

Before we look into the subject of fixing proper sum insured, let us see how the contract of insurance operates. A contract of insurance is defined as “a contract whereby one
party, called the Insurer, in consideration of premium paid by another party, called the Insured, agrees to indemnify the latter in the event of loss of or damage to the subject matter of insurance due to any of the insured perils as per the terms and conditions of the policy.”

In the case of a Fire insurance contract, the sum insured should be adequate; because the policy provides for an Average Clause whereby the assessed claim is reduced in proportion to the under-insurance. The average clause is reproduced below:

**Policies A & B – Non-Industrial risks**

“If the property hereby insured shall at the breaking out of any free or at the commencement of any destruction of or damage to the property by any other peril hereby Insured against be collectively of greater value than the sum insured against be collectively of greater value than the sum insured thereon, then the insured shall be considered as being his own insurer for the difference and shall bear a ratable proportion of the loss accordingly. Provided, however, that if the sum insured hereby on the property insured shall at the breaking out of such fire or at the commencement of such destruction or damage be not less than 85% (eighty-five) percent of the collective value of the property insured, this condition shall be of no purpose and effect.”

**Policy C – Industrial risk**

“If the property hereby insured shall at the breaking out of any insured peril be collectively of greater value than the sum insured thereon, then the insured shall be considered as being his own insurer for the difference, and shall bear a ratable proportion of the loss accordingly. Every item, if more than one, of the policy shall be separately subject to the condition”.

Since the purpose of the insurance is to place the insured in the same financial position in which he was at the time of loss, it is necessary that there should be no under-insurance and the sum insured be adequate. Fixing of adequate sum insured is also important from the point of view of the banks or financial institutions that may have advanced money on the security of the insured property. It is sometimes found that the banks or financial institutions do not concern themselves with the adequacy of the sum insured so long as it
is sufficient to cover the money advanced by them or at best the full value of the property on which they have advanced money. Invariably in such cases they find the problem only after happening of a loss when the claim amount is suitably adjusted for under-insurance and the full indemnity is not available due to the inadequacy of the sum insured.

**Fire Material Damage Policies – Sum Insured**

Let us remind ourselves of some of the recognized facts before examining the matter in detail.

1) The sum insured is always fixed by the proposer.
2) It is the limit of Insurer’s liability under a policy.
3) It is the amount on which the rate is applied to determine the premium payable for the insurance.
4) The sum insured should represent the actual value of the property to be insured. Insuring for higher value than the actual value gives no advantage to the insured as payment of claim, if any, is subject to the principle of indemnity.
5) Insuring for value lesser than the actual value makes the insured self-insurer for the difference and claim, if any, is subjected to ‘average’ clause whereby he is penalized for under-insurance.
6) In case of joint ownership of any property, the insured can get the claim only in respect of his share. He could, however, insure full value of the property on behalf of other co-owners as well in which case the claim, if any, is paid to each co-owner to the extent of their insurable interest.

It is, therefore, important to determine the sum to be insured very carefully. It is suggested that this should be based on each of various items i.e. building, plant, machinery, contents, etc. A Check-List is annexed at the end of this report to facilitate computation of proper sum insured.
Fire Hazards and Fire Prevention

Fire safety refers to precautions that are taken to prevent or reduce the likelihood of a fire that may result in death, injury, or property damage, alert those in a structure to the presence of an uncontrolled fire in the event one occurs, better enable those threatened by a fire to survive in and evacuate from affected areas, or to reduce the damage caused by a fire. Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building.

Threats to fire safety are referred to as fire hazards. A fire hazard may include a situation that increases the likelihood a fire may start or may impede escape in the event a fire occurs.

Fire safety is often a component of building safety. Those who inspect buildings for violations of the Fire Code and go into schools to educate children on Fire Safety topics are fire department members known as fire prevention officers. The Chief Fire Prevention Officer or Chief of Fire Prevention will normally train newcomers to the Fire Prevention Division and may also conduct inspections or make presentations.

Key Element of a Fire safety Policy

- Building a facility in accordance with the version of the local building code
- Maintaining a facility and conducting yourself in accordance with the provisions of the fire code. This is based on the occupants and operators of the building being aware of the applicable regulations and advice.

Examples of these include:

- Not exceeding the maximum occupancy within any part of the building.
- Maintaining proper fire exits and proper exit signage (e.g., exit signs pointing to them that can function in a power failure)
- Compliance with electrical codes to prevent overheating and ignition from electrical faults or problems such as poor wire insulation or overloading wiring, conductors, or other fixtures with more electric current than they are rated for.
- Placing and maintaining the correct type of fire extinguishers in easily accessible places.
- Properly storing and using, hazardous materials that may be needed inside the building for storage or operational requirements (such as solvents in spray booths).
- Prohibiting flammable materials in certain areas of the facility.
- Periodically inspecting buildings for violations, issuing Orders To Comply and, potentially, prosecuting or closing buildings that are not in compliance, until the deficiencies are corrected or condemning it in extreme cases.
- Maintaining fire alarm systems for detection and warning of fire.
- Obtaining and maintaining a complete inventory of fires tops.
- Ensuring that spray fireproofing remains undamaged.
- Maintaining a high level of training and awareness of occupants and users of the building to avoid obvious mistakes, such as the propping open of fire doors.
- Conduct fire drills at regular intervals throughout the year.

**Common Fire Hazards**

Some common fire hazards are:

- Kitchen fires from unattended cooking, such as frying, broiling, and simmering
- Electrical systems that are overloaded, resulting in hot wiring or connections, or failed components
- Combustible storage areas with insufficient protection
- Combustibles near equipment that generates heat, flame, or sparks
- Candles and other open flames
- Smoking (Cigarettes, cigars, pipes, lighters, etc.)
- Equipment that generates heat and utilizes combustible materials
o Flammable liquids and aerosols
o Flammable solvents (and rags soaked with solvent) placed in enclosed trash cans
o Fireplace chimneys not properly or regularly cleaned
o Cooking appliances - stoves, ovens
o Heating appliances - fireplaces, wood burning stoves, furnaces, boilers, portable heaters
o Household appliances - clothes dryers, curling irons, hair dryers, refrigerators, freezers
o Chimneys that concentrate creosote
o Electrical wiring in poor condition
o Batteries
o Personal ignition sources - matches, lighters
o Electronic and electrical equipment
o Exterior cooking equipment - barbecue

Fire Code:

In America, the Fire code (also Fire prevention code or Fire safety code) is a model code adopted by the state or local jurisdiction and enforced by fire prevention officers within municipal fire departments. It is a set of rules prescribing minimum requirements to prevent fire and explosion hazards arising from storage, handling, or use of dangerous materials, or from other specific hazardous conditions. It complements the building code. The fire code is aimed primarily at preventing fires, ensuring that necessary training and equipment will be on hand, and that the original design basis of the building, including the basic plan set out by the architect, is not compromised. The fire code also addresses inspection and maintenance requirements of various fire protection equipment in order to maintain optimal active fire protection and passive fire protection measures.

A typical fire safety code includes administrative sections about the rule-making and enforcement process, and substantive sections dealing with fire suppression equipment,
particular hazards such as containers and transportation for combustible materials, and specific rules for hazardous occupancies, industrial processes, and exhibitions.

Sections may establish the requirements for obtaining permits and specific precautions required to remain in compliance with a permit. For example, a fireworks exhibition may require an application to be filed by a licensed pyrotechnician, providing the information necessary for the issuing authority to determine whether safety requirements can be met. Once a permit is issued, the same authority (or another delegated authority) may inspect the site and monitor safety during the exhibition, with the power to halt operations, when unapproved practices are seen or when unforeseen hazards arise.

**List of some typical fire and explosion issues in a fire code**

- Fireworks, explosives, mortars and cannons, model rockets (licenses for manufacture, storage, transportation, sale, use)
- Certification for servicing, placement, and inspecting fire extinguishing equipment
- General storage and handling of flammable liquids, solids, gases (tanks, personnel training, markings, equipment)
- Limitations on locations and quantities of flammables (e.g., 10 liters of gasoline inside a residential dwelling)
- Specific uses and specific flammables (e.g., dry cleaning, gasoline distribution, explosive dusts, pesticides, space heaters, plastics manufacturing)
- Permits and limitations in various building occupancies (assembly hall, hospital, school, theater, elderly care, child care, prs that require a smoke detector, sprinkler system, fire extinguisher, or other specific equipment or procedures
- Removal of interior and exterior obstructions to emergency exits or firefighters and removal of hazardous materials
- Permits and limitations in special outdoor applications (tents, asphalt kettles, bonfires, etc.)
- Other hazards (flammable decorations, welding, smoking, bulk matches, tire yards)
- Electrical safety codes such as the National Electrical Code (by the National Fire Protection Association) for the U.S. and some other places in the Americas
- Fuel gas code

**Public Fire Safety Education:**

Most U.S. fire departments have fire safety education programs.

Fire prevention programs may include distribution of smoke detectors, visiting schools to review key topics with the students and implementing nationally recognized programs such as NFPAs "Risk Watch" and "Learn not to burn".

Other programs or props can be purchased by fire departments or community organizations. These are usually entertaining and designed to capture children's attention and relay important messages. Props include those that are mostly auditory, such as puppets and robots. The prop is visually stimulating but the safety message is only transmitted orally. Other props are more elaborate, access more senses and increase the learning factor. They mix audio messages and visual cues with hands-on interaction. Examples of these include mobile trailer safety houses and tabletop hazard house simulators. Some fire prevention software is also being developed to identify hazards in a home. All programs tend to mix messages of general injury prevention, safety, fire prevention, and escape in case of fire. In most cases the fire department representative is regarded as the expert and is expected to present information in a manner that is appropriate for each age group.

**Fire educator qualifications**

The US industry standard that outlines the recommended qualifications for fire safety educators is NFPA 1035: Standard for Professional Qualifications for Public Fire and Life Safety Educator, 2005 Edition. This standard is currently being revised and the newest edition is slated for release in 2010. According to NFPA, 1035 specifically covers the requirements for Fire and Life Safety Educator Levels I, II, and III; Public Information Officer; and Juvenile Firesetter Intervention Specialist Levels I and II.
**Target audiences**

According to the United States Fire Administration, the very young and the elderly are considered to be "at risk" populations. These groups represent approximately 33% of the population.

**Fire Safety Plan**

A fire safety plan is required by all North American national, state and provincial fire codes based on building use or occupancy types. Generally, the owner of the building is responsible for the preparation of a fire safety plan. Buildings with elaborate emergency systems may require the assistance of a fire protection consultant. After the plan has been prepared, it must be submitted to the Chief Fire Official or authority having jurisdiction for approval. Once approved, the owner is responsible for implementing the fire safety plan and training all staff in their duties. It is also the owner’s responsibility to ensure that all visitors and staff are informed of what to do in case of fire. During a fire emergency, a copy of the approved fire safety plan must be available for the responding fire departments use.

**Fire safety plan structure**

- Key contact information
- Utility services (Including shut-off valves for water, gas and electric)
- Access issues
- Dangerous stored materials
- Location of people with special needs
- Connections to sprinkler system
- Layout, drawing, and site plan of building
- Maintenance schedules for life safety systems
- Personnel training and fire drill procedures

**Use of fire safety plans**

Fire safety plans are a useful tool for fire fighters to have because they allow them to know critical information about a building that they may have to go into. In addition to this, fire safety plans can also provide specialized information that, in the case of a
hospital fire, can provide information about the location of things like the nuclear medicine ward. In addition to this, fire safety plans also greatly improve the safety of fire fighters. According to FEMA, 16 percent of all fire fighter deaths in 2002 occurred due to a structural collapse or because the fire fighter got lost. Fire safety plans can outline any possible structural hazards, as well as give the fire fighter knowledge of where he is in the building.

**Fire safety plans in the fire code**

In North America alone, there are around 8 million buildings that legally require a fire safety plan, be it due to provincial or state law. Not having a fire safety plan for buildings which fit the fire code occupancy type can result in a fine, and they are required for all buildings, such as commercial, industrial, assembly, etc.

**Advances in fire safety planning**

As previously stated, a copy of the approved fire safety plan shall be available for the responding fire department. This, however, is not always the case. Up until now, all fire plans were stored in paper form in the fire department. The problem with this is that sorting and storing these plans is a challenge, and it is difficult for people to update their fire plans. As a result, only half of the required buildings have fire plans, and of those, only around 10 percent of are up-to-date. This problem has been solved through the introduction of digital fire plans. These fire plans are stored in a database and can be accessed wirelessly on site by firefighters and are much simpler for building owners to update.

**Fire Hazard:**

Electrical hazards

- Damaged wiring

- Damaged plugs

- Damp or wet wires

- Overloaded motors
• Broken switches, outlets or sockets

• Problems with lighting fixtures

• Faulty heating elements

• Overloaded circuits

• Liquids near computers

• Computers without surge protectors

Housekeeping hazards

• Piles of scrap, waste materials, and trash

• Sawdust, metal or plastic powder that can form an explosive mixture with air

• Obstructed aisles

• Blocked emergency exits

• Material covering up fire extinguishers, exit signs, and alarms

• Blocked sprinkler heads

Friction hazards

• Hot bearings

• Misaligned or broken machine parts

• Choking or jamming materials

• Poor adjustment of moving parts

• Inadequate lubrication
Process or operation-related hazards

- Cutting and welding operations, which use open flames and produce sparks
- Molten metal, which can ignite combustibles or fall into cracks and start a fire that might not erupt until after the work is done
- Processes that heat materials to high temperatures
- Drying operations where materials in dryers can overheat
- Grinding operations that produce sparks and dust
- Processes in which flammable vapors are released

Storage hazards

- Materials stacked too high blocking sprinkler heads (need 18-inches clearance from head)
- Flammable or combustible materials stored too close to heat sources
- Flammable materials not stored in special containers and cabinets Inadequate ventilation in storage areas
- Materials that might react with one another stored together
- Materials stored in damaged containers
- Materials stored in unlabeled containers
- Containers not tightly sealed

Smoking hazards

- Ignoring "No Smoking" signs
• Smoking around flammable or combustible materials

• Throwing matches and cigarettes or cigars on tables or workbenches

• Tossing butts on the floor or grass without properly extinguishing them in an ashtray or ash can

• Tossing lighted butts or matches out windows or doors

• Smoking in bed

• Leaving a cigarette/cigar unattended

• Smoking in areas where there is an accumulation of sawdust, plastic or metal powders that may become explosive

**Fire Prevention:**

Fire prevention is a function of many fire departments. The goal of fire prevention is to educate the public to take precautions to prevent potentially harmful fires, and be educated about surviving them. It is a proactive method of reducing emergencies and the damage caused by them. Many fire departments have a Fire Prevention Officer. In the general sense of preventing harmful fires, many aspects are discussed in the articles Fire protection and Fire safety.

**Students**

Students are often the primary target of fire prevention. Firefighters will visit schools and teach students the basics of fire prevention. Workshops should be conducted in schools for educating students for the effects of fires and how to deal with it.

**Adults**

It is important that 'adults' also know the basics of fire prevention. Teaching children and maintaining safe environments at work and home are essential to preventing dangerous emergencies.
Senior citizens

Along with young children, seniors have been identified as an "at risk" group, especially in hazardous situations. It is important that seniors have pre-planned their escape routes and have access to emergency exits, for example.

Lessons for Fire Prevention

Fire prevention education can take the form of videos, pamphlets, and banners. Often, the messages and lessons are simple tips. Effective and important lessons and messages include:

Stop, drop and roll

If one's clothing catches on fire, the most effective method of extinguishing the fire is to stop, drop to the ground, and roll back and forth to smother the flame. Running around will simply fan the flames.

Smoke detectors save lives

- Working smoke detectors reduce the chances of death in a fire by half.
- Nearly 900 lives could be saved annually if every home had working smoke detectors.
- Even just one smoke detector reduces the chances of death by almost half.
- Nearly half of all fire survivors remember hearing their smoke alarm.
- Deaths due to fire have decreased by half since the invention of the smoke detector.
- Most deaths due to fire occur at night when people are sleeping.

Smoke detector maintenance

- The most common cause of smoke detector failure is missing or disconnected batteries.
- Nuisance alarms are the most common reason for deliberately disconnecting batteries.
• Missing disconnected or dead batteries account for 73% of smoke detector failures.

• There are more homes with no working smoke detectors than there are homes without any smoke detectors at all. There are millions of homes in each category.

• Smoke detectors should be installed on every level of your home.

• Change your batteries twice a year.

• Clean your detectors also.

• Replace the entire unit every ten years.

• Disconnecting your batteries, for any reason, is dangerous and illegal.

**Smoke detectors are just a start**

• Smoke detectors only wake you up.

• Never assume that someone has already called the fire department, or that it was automatically notified.

• Know tonight what you will do if you are ever woken up by your smoke detectors.

• Make sure your family and friends know also.

• If you change your batteries, wake up and evacuate immediately you are a hero to your family, friends, and firefighters.

**Don't Just Leave to Do Something Else**

• One of the most common reasons for fires is how people often leave stoves, ovens, toasters, clothing irons, barbecues, and candles unattended. Therefore one must always be aware when using the aforementioned appliances.

**Get out and stay out**

Each year, many people are injured or killed because they reenter their burning homes. If you are lucky enough to have escaped, stay out.

**Firefighters are your friends**

One of the most critical jobs of a firefighter is search and rescue. For young children, it is important that firefighters are seen as people they can follow and trust. A firefighter in
firefighting gear breathing with an air tank can be scary. One way a child can get used to or trust a firefighter is seeing a firefighter dress up step by step seeing that it is a person inside. Also being able to walk up and touch the firefighter can reassure the child that he or she is a real person.

**Don’t play with fire**

Playing with fire causes many unnecessary emergencies, and hurts and kills many people, and is a leading cause of forest fires.

**False alarms kill**

False alarms waste valuable manpower and resources, which may be needed desperately at a real emergency. Also, any time firefighters ride trucks, they are at risk. Eighteen percent of firefighter deaths occur while responding to calls.

**Fire Prevention Week**

Fire Prevention Week is observed in the United States in October.

- 2009 - October 4–10 Theme: "Stay Fire Smart! Don’t Get Burned"
- 2010 - October 3–9 Theme: TBA

Many fire departments observe "Fire Prevention Month" for all of October. Fire departments may visit schools, hang banners, give firehouse tours or hold open houses.

**What are the fire hazards and how to prevent them?**

Negligence and indifference are major causes of fire occurrences. The occurrence of fire will result, in some severe circumstances, in fatalities, bodily injuries, business and/or financial losses, job losses, environmental damages and asset ruins. Hence, fire is not something trivial that any responsible human should neglect.
<table>
<thead>
<tr>
<th>HAZARDS</th>
<th>DON'TS</th>
<th>DOS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="93x603.png" alt="Image" /></td>
<td>Do NOT overload electrical outlet with too many plugs.</td>
<td>Use authority approved type of plugs and extension cords. Total appliances current consumption should not exceed the approved rating of one socket outlet.</td>
</tr>
<tr>
<td><img src="90x442.png" alt="Image" /></td>
<td>Do NOT obstruct fire exit and escape passageways.</td>
<td>All fire exits and escape passageways shall be free from obstruction.</td>
</tr>
<tr>
<td><img src="90x288.png" alt="Image" /></td>
<td>Smoking is prohibited in the campus.</td>
<td>Comply with NO SMOKING rules.</td>
</tr>
<tr>
<td><img src="90x127.png" alt="Image" /></td>
<td>Do NOT wedge the fire door open.</td>
<td>All fire door shall be kept closed at all times.</td>
</tr>
<tr>
<td>Do NOT use the Electrical or M&amp;E Riser compartments as storage areas.</td>
<td>All goods are to be kept in their appropriate storage area.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Do NOT use frayed electrical cable.</td>
<td>Ensure all electrical cable is well insulated and maintained.</td>
<td></td>
</tr>
<tr>
<td>Do NOT let unwanted items accumulate in your work area.</td>
<td>Unwanted items shall be removed and disposed in the authorised dumping site.</td>
<td></td>
</tr>
</tbody>
</table>
Hazard Based Risk Classification

A **hazard** is a situation that poses a level of threat to life, health, property, or environment. Most hazards are dormant or potential, with only a theoretical risk of harm; however, once a hazard becomes "active", it can create an emergency situation. A hazardous situation that has come to pass is called an incident. Hazard and possibility interact together to create risk. For hazards in the context of risk assessment.

**Mode of Hazard:**
Hazards are sometimes classified into three modes

- **Dormant** - The situation has the potential to be hazardous, but no people, property, or environment is currently affected by this. For instance, a hillside may be unstable, with the potential for a landslide, but there is nothing below or on the hillside that could be affected.
- **Armed** - People, property, or environment are in potential harm's way.
- **Active** - A harmful incident involving the hazard has actually occurred. Often this is referred to not as an "active hazard" but as an accident, emergency, incident, or disaster.

**Types of Hazard**
Hazards are generally of five types:

**Physical hazards** are conditions or situations that can cause the body physical harm or intense stress. Physical hazards can be both natural and human made elements.

**Chemical hazards** are substances that can cause harm or damage to the body, property or the environment. Chemical hazards can be both natural and human made origin.

**Biological hazards** are biological agents that can cause harm to the human body. These some biological agents can be viruses, parasite, bacteria, food, fungi, and foreign toxin.

**Psychological hazards** are created during work related stress or a stressful environment.
Radiation hazards causes harm to the human or damage body by affecting the cell directly.

Classifying Hazard:
By its nature, a hazard involves something that could potentially be harmful to a person's life, health, property, or the environment. One key concept in identifying a hazard is the presence of stored energy that, when released, can cause damage. Stored energy can occur in many forms: chemical, mechanical, thermal, radioactive, electrical, etc. Another class of hazard does not involve release of stored energy; rather it involves the presence of hazardous situations. Examples include confined or limited egress spaces, oxygen-depleted atmospheres, awkward positions, repetitive motions, low-hanging or protruding objects, etc. There are several methods of classifying a hazard, but most systems use some variation on the factors of "likelihood" of the hazard turning into an incident and the "seriousness" of the incident if it were to occur.

A common method is to score both likelihood and seriousness on a numerical scale (with the most likely and most serious scoring highest) and multiplying one by the other in order to reach a comparative score.

$\text{Risk} = \text{Hazard} \times \text{Vulnerability} \times (-) \text{Capacity}$

This score can then be used to identify which hazards may need to be mitigated. A low score on likelihood of occurrence may mean that the hazard is dormant, whereas a high score would indicate that it may be an "active" hazard.

An important component of "seriousness if incident occurred" is "serious to whom?" Different populations may be affected differently by accidents. For example, an explosion will have widely differing effects on different populations depending on the distance from the explosion. These effects can range from death from overpressure or shrapnel to inhalation of noxious gases (for people downwind) to being exposed to a loud noise.

Prioritization of hazards
Hazards can be identified and prioritized using the SMUG model. The SMUG model provides a means for prioritizing hazards based on the risk they present during an
emergency. The SMUG model stands for Seriousness, Manageability, Urgency, and Growth.

**Causes of Hazard:**
There are many causes, but they can broadly be classified as below. See the linked articles for comprehensive lists of each type of hazard.

- Natural hazards include anything that is caused by a natural process, and can include obvious hazards such as volcanoes to smaller scale hazards such as loose rocks on a hillside.
- Man-made hazards are created by humans, whether long-term (such as global warming) or immediate (like the hazards present at a construction site). These include *activity related hazards* (such as flying) where cessation of the activity will negate the risk.
- Deadly force or retribution is that hazard involving any protective and responsive-ready threat of harm or punishment that becomes active in the event of a breach of security, or violation of a boundary or barrier (physical, legal, moral) intended to prevent unauthorized or unsafe access or entry or exposure to a situation, to something, or to someone.

**What are Control Measures?**
Control measures include actions that can be taken to reduce the potential of exposure to the hazard, or the control measure could be to remove the hazard or to reduce the likelihood of the risk of the exposure to that hazard being realized. A simple control measure would be the secure guarding of moving parts of machinery eliminating the potential for contact. When we look at control measures we often refer to the hierarchy of control measures.
What are Control Measures?

Elimination of the hazard is not always achievable though it does totally remove the hazard and thereby eliminates the risk of exposure. An example of this would be that petrol station attendants in Ireland are no longer exposed to the risk of chronic lead poisoning following the removal of lead from petrol products sold at forecourts.

Substituting the hazard may not remove all of the hazards associated with the process or activity and may introduce different hazards but the overall harm or health effects will be lessened. In laboratory research, toluene is now often used as a substitute for benzene. The solvent-properties of the two are similar but toluene
<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td><strong>3. Isolate the hazard</strong></td>
<td>Isolating the hazard is achieved by restricting access to plant and equipment or in the case of substances locking them away under strict controls. When using certain chemicals then a fume cupboard can isolate the hazard from the person, similarly placing noisy equipment in a non-accessible enclosure or room isolates the hazard from the person(s).</td>
</tr>
<tr>
<td><strong>4. Use engineering controls</strong></td>
<td>Engineering Controls involve redesigning a process to place a barrier between the person and the hazard or remove the hazard from the person, such as machinery guarding, proximity guarding, extraction systems or removing the operator to a remote location away from the hazard.</td>
</tr>
<tr>
<td><strong>5. Use administrative controls</strong></td>
<td>Administrative controls include adopting standard operating procedures or safe work practices or providing appropriate training, instruction or information to reduce the potential for harm and/or adverse health effects to person(s). Isolation and permit to work procedures are examples of administrative controls.</td>
</tr>
<tr>
<td><strong>6. Use personal protective equipment</strong></td>
<td>Personal protective equipment (PPE) include gloves, glasses, earmuffs, aprons, safety footwear, dust masks which are designed to reduce exposure to the hazard. PPE is usually seen as the last line of defence and is usually used in conjunction with one or more of the other control measures. An example of the weakness of this control measure is that it is widely recognised that single-use dust masks cannot consistently achieve and maintain an effective facepiece-to-face seal, and cannot be adequately fit-tested and do not offer much, if any real protection against small particulates and may lead to a false sense of security and increase risk. In such</td>
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instances an extraction system with fitted respirators may be preferable where the hazard may have significant health effects from low levels of exposure such as using isocyante containing chemicals.

Originating Hazards

A hazard is any biological, chemical, mechanical, environmental or physical agent that is reasonably likely to cause harm or damage to humans, other organisms, or the environment in the absence of its control. This can include, but is not limited to: asbestos, electricity, microbial pathogens, motor vehicles, nuclear power plants, pesticides, vaccines, and X-rays. Identification of hazards is the first step in performing a risk assessment and in some cases risk assessment may not even be necessary.

Types

Biological

A biological hazard is one originating from an organism that is foreign (in presence or concentration) to the organism being affected. Many biological hazards are associated with food, including certain viruses, parasites, fungi, bacteria, and plant and seafood toxins. Pathogenic Campylobacter and Salmonella, are common food borne biological hazards. The hazards from these bacteria can be avoided through risk mitigation steps such as proper handling, storing, and cooking of food. Disease in humans can come from biological hazards in the form of infection by bacteria, antigens, cars, plane, bus, viruses, or parasites. There is some concern that new technologies such as genetic engineering pose biological hazards. Genetically modified organisms are relatively new man-made biological hazards and many have yet to be fully characterized. For example, corn expressing insecticidal Cry proteins from the bacterium Bacillus thuringiensis was first introduced in 1996 and many of its potential detrimental effects on non-target organisms have yet to be examined.
**Chemical**

A chemical can be considered a hazard if by virtue of its intrinsic properties it can cause harm or danger to humans, property, or the environment. Some chemicals occur naturally in certain geological formations, such as radon gas or arsenic. Other chemicals include products with commercial uses, such as agricultural and industrial chemicals, as well as products developed for home use. Pesticides, which are normally used to control unwanted insects and plants, may cause a variety of negative effects on non-target organisms. DDT can build up, or bioaccumulation, in birds resulting in thinner-than-normal egg shells which can break in the nest. The organ chlorine pesticide dihedron has been linked to Parkinson's disease. Corrosive chemicals like sulfuric acid, which is found in car batteries and research laboratories can cause severe skin burns. Many other chemicals used in industrial and laboratory settings can cause respiratory, digestive, or nervous systems problems if they are inhaled, ingested, or absorbed through the skin. The negative effects of other chemicals, such as alcohol and nicotine, have been well documented. Hazards associated with chemicals are dependent on the dose or amount of the chemical. For example, iodine in the form of potassium iodated is used to produce iodized salt. When applied at a rate of 20 mg of potassium iodated per 1000 mg of table salt, the chemical is beneficial in preventing goiter, while iodine intakes of 1200–9500 mg in one dose have been known to cause death.

**Mechanical**

A mechanical hazard is any hazard involving a machine or process. Motor vehicles, aircraft, and air bags pose mechanical hazards. Compressed gases or liquids can also be considered a mechanical hazard.

**Physical**

A physical hazard is a naturally occurring process that has the potential to create loss or damage. Physical hazards include, but are not limited to, earthquakes, floods, and tornadoes. Physical hazards often have both human and natural elements. Flood problems can be affected by climate fluctuations and storm frequency, both natural elements, and by land drainage and building in a flood plain, human elements. Another physical hazard, X-rays, are naturally occurring from solar radiation, but have been utilized by
humans for medical purposes; however, overexposure can lead to cancer, skin burns, and tissue damage.

**Hazard vs. Risk**

The terms hazard and risk are often used interchangeably, however, in terms of risk assessment, these are two very distinct terms. As defined above, a hazard is any biological, chemical, mechanical, or physical agent that is reasonably likely to cause harm or damage to humans or the environment with sufficient exposure or dose. Risk is defined as the probability that exposure to a hazard will lead to a negative consequence, or more simply, $\text{Risk} = \text{Hazard} \times \text{Dose (Exposure)}$. Thus, a hazard poses no risk if there is not exposure to that hazard. Consider the following example:

Three people crossing the Atlantic in a rowboat face a hazard of drowning. (...) Three hundred people crossing the Atlantic in an ocean liner face the same hazard of drowning, (...). The risk to each individual per crossing is given by the probability of the occurrence of an accident in which he or she drowns. (...) Clearly the hazard [drowning] is the same for each individual, but the risk [probability of drowning] is greater for the individuals in the rowboat than in the ocean liner.

**Hazard Identification:**

**Mechanical and Physical Hazards**

Many mechanical hazards (aircraft, motor vehicles) and physical hazards (earthquakes, floods) have already been identified and well described. Hazard identification of new machines and/or industrial processes occurs at various stages in the design of the new machine or process. These hazard identification studies focus mainly on deviations from the intended use or design and the harm that may occur as a result of these deviations and are regulated by various agencies such as the Occupational Safety and Health Administration and the National Highway Traffic Safety Administration.

**Biological Hazards**

Many biological hazards have also been identified. For example, the hazards of naturally-occurring bacteria such as *Escherichia coli* and *Salmonella*, are well known as disease causing pathogens and a variety of measures have been taken to limit human exposure to
these microorganisms through food safety, good personal hygiene and education. However, the potential for new biological hazards exist through the discovery of new microorganisms and through the development of new genetically modified (GM) organisms. Use of new GM organisms is regulated by various governmental agencies. The U.S. Environmental Protection Agency (EPA) controls GM plants that produce or resist pesticides (i.e. BT corn and Roundup ready crops). The U.S. Food and Drug Administration (FDA) regulate GM plants that will be used as food or for medicinal purposes.

**Chemical Hazards**

A variety of chemical hazards (DDT, atrazine) have been described as well. However, every year companies produce more new chemicals to fill a new need or to take the place of an older, less effective chemical. Laws, such as the Federal Food, Drug, and Cosmetic Act and the Toxic Substances Control Act in the U.S, require protection to human health and the environment for any new chemical introduced. In the U.S., the EPA regulates new chemicals that may have environmental impacts (i.e. pesticides or chemicals released during a manufacturing process), while the FDA regulates new chemicals used in foods or as drugs. The potential hazards of these chemicals can be identified by performing a variety of tests prior to the authorization of usage. The amount of tests required and the extent to which they are tested varies depending on the desired usage of the chemical. Chemicals designed as new drugs must undergo more rigorous tests that those chemicals to be used as pesticides.

**Environmental Hazard**

**Natural hazards**

Extremes of nature have threatened humans and the built environment, and social particularly more vulnerable humans, throughout history and in some cases, on a day to day basis. People and the built environment are not only at risk from geophysical hazards such as earthquakes, floods, volcanoes and tsunami but also from technological hazards including industrial explosions, release of chemical hazards and major transport accidents. There is additionally the emergence of man made threats to people and the built environment in the modern world where hazards presented by threats of terrorism
and failures of technology. According to the Red Cross each year 130,000 people are killed, 90,000 are injured and 140 million are affected by unique events known as disaster. (IFRCRCS, 1998).

Recent policy orientated work into hazard management began with the work of Gilbert White, the first person to study engineering schemes as a means of defending against flooding in the USA. From 1935 to 1967 Gilbert White and his colleagues led the research into flood defenses further collaboration of investigation was undertaken at the University of Chicago. In December 1989 after several years of preparation, the United Nations General Assembly adopted resolution 44/236 proclaiming the 1990s as the International Decade for Natural Disaster Reduction (IDNDR). The objective of that decade was stated in the annex of Resolution 44/236 as follows: "...to reduce through concerted international action, especially in developing countries, the loss of life, property damage, and social and economic disruption caused by natural disasters, such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfire, grasshopper and locust infestations, drought and desertification and other calamities of natural origin."

**Mitigating natural hazards**

Methods to reduce risk from natural hazards include construction of prone facilities away from areas with high risk, redundancy, an emergency reserve fund, purchasing relevant insurance, and the development of operational recovery plans.

**Natural hazard and disaster definitions**

Disaster can be defined as a risk of hazard which has the potential to cause significant personal, societal, property and damage to the environment. Disaster can manifest in various forms threatening those people or environments specifically vulnerable to set disaster, for example a hurricane making landfall in south east United States presents a risk to those people, buildings and diverse environments in the path of the hurricane and those who will be involved in the emergency response in regard to trauma, post-traumatic stress and stress models of cause and effect. Another popular definition of natural hazard more prominent in the 1960s was the definition given by Burton and Kates (1964) who defined natural disaster as 'those elements of the physical environment harmful to Man
and caused by forces extraneous to him.' This definition is not inclusive of humans as an
element of risk or vulnerability and is as such not so good a definition in modern disaster
management practices. If we are to include human factors which we must do, it is
important to recognize man as an element that is at risk of natural hazards and an element
which plays a part in mitigating, responding to and living within the realm, in many
cases, of natural events that may become hazardous (McGuire, et al., 2002). As McGuire
et al. say (McGuire, 2002, p 10) 'it is only when people and their possessio ns get in the
way of natural processes that hazards exist'. Kates went on to define environmental
hazard as 'the treat potential posed to man or nature by events originating in, or
transmitted by, the natural or built environment' (1978). Keith Smith (1992) says that this
definition includes a broader range of hazards ranging from long term environmental
deterioration such as acidification of soils and build-up of atmospheric carbon dioxide to
communal and involuntary social hazards such as crime and terrorism to voluntary and
personal hazards such as drug abuse and mountain climbing. Environmental hazards
usually have defined or common characteristics including their tendency to be rapid onset
events meaning they occur with a short warning time, they have a clear source of origin
which is easily identified, impact will be swift and losses suffered quickly during or
shortly after on-set of the event, risk of exposure is usually involuntary due to location or
proximity of people to set hazard and the 'disaster occurs with an intensity and scale that
justifies an emergency response' (Smith, 1992). Hazard was grouped by Hewitt and
Burton (1971) according to their characteristics. These were factors related to
gephysical events which were not process specific (Smith, 1992), they were: 1. Areal
extent of damage zone 2. Intensity of impact at a point 3. Duration of impact at a point 4.
Rate of onset of the event 5. Predictability of the event.

Disaster can take various forms including hurricane, volcano, tsunami, earthquake,
drought, famine, plague, disease, rail crash, car crash, tornado, deforestation, flooding,
toxic release, spills and can affect people and the environment on the local regional level,
national level and international level where the international community becomes
involved with aid donation, governments give money to support affected countries'
economies with the disaster response and reconstruction post disaster. In defining hazard
it is important to distinguish between natural hazards which may be defined a "extreme
events that originate in the biosphere", hydrosphere, lithosphere or atmosphere" (Alexander, Confronting catastrophe, 2000) or as Keith Smith (Smith, 1992) says 'a potential threat to humans and their welfare' and technological hazards which include explosions, release of toxic materials, episodes of severe contamination, structural collapses, and transportation, construction and manufacturing accidents (Alexander, Confronting catastrophe, 2000) and also from social hazards such as riots, crowd crushes and terrorist incidents (Alexander, Confronting catastrophe, 2000). There is also a distinction to be made between rapid on-set natural hazards, technological hazards and social hazards and the consequences of environmental degradation such as desertification and drought, which are described as being of sudden occurrence and relatively short duration (McGuire, et al., 2002). Another distinction to be made as outlined by Keith Smith (1992) is that of the distinction between hazard and risk. We have defined hazard above but Keith Smith the distinction is that risk 'has the additional implication of the chance of a particular hazard actually occurring' and thus define risk as 'the probability of hazard occurrence'. Major disaster, as it is usually assessed on quantitative criteria of death and damage was defined by Sheehan and Hewitt (1969) having to conform to the following criteria:

- At least 100 people dead, or
- At least 100 people injured
- At least $1 million damage.

This definition has the added benefit of including indirect losses of life caused after initial onset of the disaster such as secondary effects of, e.g., cholera or dysentery. This definition is still commonly used but has the limitations of number of deaths, injuries and damage (in $) (Smith, 1992). UNDRO (1984) defined a disaster in a more qualitative fashion as:

An event, concentrated in time and space, in which a community undergoes sever danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented.
As with other definitions of disaster, this definition not only encompasses social aspect of disaster impact and stresses potentially caused but also has the added benefit of focusing on losses, implying the need for an emergency response as an aspect of disaster (Smith, 1992). It does not however set out quantitative thresholds or scales for damage, death or injury respectively. In defining hazard, whether it be as an 'act of God' or 'act of man' Keith Smith argues that what may be defined as a natural hazard is not in fact a hazard unless there is the presence of humans to make it a hazard and that it is merely an event of scientific interest. In this sense the environmental conditions we may consider hostile or hazardous can really be seen as neutral in that it is our 'perception, human location and actions which identify resources and hazards with the range of natural events. In this regard human sensitivity to environmental hazards is a combination of both physical exposure (natural and/or technological events at a location related to their statistical variability) and human vulnerability (in regard to social and economic tolerance of the same location). (Keith Smith, environmental hazards, 1992) Keith Smith states that natural hazards are best seen in an ecological framework in order to distinguish between natural events as natural hazards. He says 'natural hazards, therefore, result from the conflict of geophysical processes with people and they lie at the interface what has been called the natural events system and the human interface system'. He says that 'this interpretation of natural hazards gives humans a central role. Firstly through location, because it is only when people and their possessions get in the way of natural processes that hazard exists.' (Keith Smith, environmental hazards, 1992) We can regard hazard then as a geophysical event which when it occurs in extremes and a human factor is involved may be called risk of hazard. In this context we can see that there may be an acceptable variation of magnitude (Smith, 1992) which can vary from the estimated normal or average range with upper and lower limits or thresholds. In these extremities the natural resource will become an event that presents risk to the environment or people. Keith Smith (Smith, 1992) says 'most social and economic activates are geared to some expectation of the 'average' conditions. As long as the variation of the environmental element remains fairly close to this expected performance, insignificant damage occurs and the element will be perceived as beneficial. However when the variability exceeds some threshold beyond the normal band of tolerance, the same variable starts to impose a
stress on society and become a hazard.' Thus above average wind speeds resulting in a tropical depression or hurricane according to intensity measures on the Sapphire Simpson Scale will provide an extreme natural event or hazard.

Most commonly time is lineal according to medieval thought not cyclical as in such thinkers as Plato and Aristotle (Alexander, 2000). A disaster can be defined as an event occurring in time and space which affects the lives or welfare of a population or presents risk to the environment. David Alexander defines hazard as an extreme geophysical event that is capable of causing a disaster (Alexander, 2000). He says that 'extreme' in this case 'signifies a substantial departure in either the positive or the negative direction from a mean or a trend' thus flood disasters can result from unusually high precipitation and river discharge, whereas drought 'stems from unusually low values' (Alexander, 2000).

The fundamental determinates of hazard and indeed the risk of such hazards occurring is timing, location, magnitude and frequency (Alexander, 2000). Magnitudes of earthquakes for instance are measured on the Richter scale from 1 to 10, whereby each increment of 1 increases in severity and significance tenfold. The magnitude-frequency rule states that 'over a significant interval of time there will be many small events and few large ones (Alexander, Wolman, & Miller, 2000; 1960) giving a short return period for small events and long return period of larger events. Hurricanes and typhoons on the other hand occur between 5 degrees and 25 degrees north and south of the equator, tending to be seasonal phenomena which are thus largely recurrent in time and predictable in location due to the specific climate variables necessary for their formation (Alexander, 2000). In the North Atlantic Ocean they develop in the late summer and autumn for instance. This is because of the easterly perturbations known as easterly waves.

**Risk**

Risk can be defined as the likelihood or probability of a given hazard of a given level causing a particular level of loss of damage (Alexander, Confronting catastrophe, 2000). David Alexander outlined the elements of risk (Alexander, Confronting catastrophe, 2000) as populations, communities, the built environment, the natural environment, economic activities and services which are under threat of disaster in a given area. Risk can be equated with a simple equation, although it is not mathematical. The total risk
according to UNDRO 1982 is the "sum of predictable deaths, injuries, destruction, damage, disruption, and costs of repair and mitigation caused by a disaster of a particular level in a given area or areas. Mathematically it can be written as

Total risk = (Sum of the elements at risk) x (hazard x vulnerability)

David Alexander (Alexander, Confronting catastrophe, 2000, p. 13) distinguishes between risk and vulnerability saying that 'vulnerability refers to the potential for casualty, destruction, damage, disruption or other form of loss in a particular element: risk combines this with the probable level of loss to be expected from a predictable magnitude of hazard (which can be considered as the manifestation of the agent that produces the loss). As hazard have varying degrees of severity (Wisner, et al., 1994) the more intense or severe the hazard, the greater vulnerability there will be as potential for damage and destruction is increased with respect to severity of hazard. Ben Wisner argues that risk or disaster is 'a compound function of the natural hazard and the number of people, characterized by their varying degrees of vulnerability to that specific hazard, who occupy the space and time of exposure to the hazard event.' This is simplified into an equation:

\[ R = H \times V \]

Risk, vulnerability and hazard are the three factors or elements which we are considering here in this pseudo equation. Another definition of risk given by Factor analysis of information risk which may be related to disaster is 'the probable frequency and probable magnitude of future losses. Again this definition focuses on the probability of future loss whereby degree of vulnerability to hazard represents the level of risk on a particular population, built environment or environment. The relationship between severity of environmental hazard, probability and risk. Hazard severity will obviously vary it is necessary to outline threats posed by hazard. These are: 1. Hazards to people – death, injury, disease and stress 2. Hazards to goods – property damage and economic loss 3. Hazards to environment –loss of flora and fauna, pollution and loss of amenity (Smith, 1992)
**Prioritization of hazards**

**SMUG model – a basis for prioritizing hazards**

In emergency or disaster management the SMUG model of identifying and prioritizing risks associated with natural and technological hazards is an effective tool. SMUG stands for Seriousness, Manageability, Urgency and Growth and are the criteria used for prioritization. The SMUG model provides an effective means of prioritizing hazards based upon the aforementioned criteria in order to address the risks posed by the hazards to the avail of effecting effective readiness, reduction, response and recovery.

Seriousness can be defined as "The relative impact in terms of people and dollars. This includes the potential for lives to be lost and potential for injury as well as the physical, social and as mentioned, economic losses that may be incurred.

Manageability can be defined as "the relative ability to mitigate or reduce the hazard (through managing the hazard, or the community or both)”. Hazards presenting a high risk and as such requiring significant amounts of risk reduction initiatives will be rated high.

Urgency is related to the probability of risk of hazard and is defined in terms of how imperative it is to address the hazard Growth is the potential for the hazard or event to expand or increase in either probability or risk to community or both. Should vulnerability increase, potential for growth may also increase.

An example of the numerical ratings for each of the four criteria is shown below:

<table>
<thead>
<tr>
<th>Manageability</th>
<th>High = 7+</th>
<th>Medium = 5–7</th>
<th>Low = 0–4</th>
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<tbody>
<tr>
<td>Urgency</td>
<td>High = 20yr&gt;</td>
<td>Medium = 20yr&lt;</td>
<td>Low = 100yrs</td>
</tr>
<tr>
<td>Growth</td>
<td>High = 3</td>
<td>Medium = 2</td>
<td>Low = 1</td>
</tr>
<tr>
<td>Seriousness</td>
<td>High = 4-5</td>
<td>Medium = 2-3</td>
<td>Low = 0-1</td>
</tr>
</tbody>
</table>
Contributory Hazards

Construction workers build, repair, maintain, renovate, modify and demolish houses, office buildings, temples, factories, hospitals, roads, bridges, tunnels, stadiums, docks, airports and more. The International Labor Organization (ILO) classifies the construction industry as government and private-sector firms erecting buildings for habitation or for commercial purposes and public works such as roads, bridges, tunnels, dams or airports. In the United States and some other countries, construction workers also clean hazardous waste sites.

Construction as a proportion of gross domestic product varies widely in industrialized countries. It is about 4% of GDP in the United States, 6.5% in Germany and 17% in Japan. In most countries, employers have relatively few full-time employees. Many companies specialize in skilled trades—electricity, plumbing or tile setting, for instance—and work as subcontractors.

The Construction Labor Force

A large portion of construction workers are unskilled laborers; others are classified in any of several skilled trades. Construction workers include about 5 to 10% of the workforce in industrialized countries. Throughout the world, over 90% of construction workers are male. In some developing countries, the proportion of women is higher and they tend to be concentrated in unskilled occupations. In some countries, the work is left to migrant workers, and in others, the industry provides relatively well-paid employment and an avenue to financial security. For many, unskilled construction work is the entry into the paid labor force in construction or other industries.

Selected Construction Occupations.

Boilermakers
Bricklayers, concrete finishers and masons
Carpenters
Electricians
Elevator constructors
Glaziers
Hazardous materials (e.g., asbestos, lead, toxic dumps) removal workers
Installers of floors (including terrazzo), carpeting
Installers of drywall and ceilings (including ceiling tile)
Insulation workers (mechanical and floor, ceiling and wall)
Iron and steel workers (reinforcement and structural)
Laborers
Maintenance workers
Millwrights
Operating engineers (drivers of cranes and other heavy equipment maintenance workers)
Painters, plasterers and paperhangers
Plumbers and pipefitters
Roofers and shingles
Sheet metal workers
Tunnel workers

**Work Organization and Labor Instability**

Construction projects, especially large ones, are complex and dynamic. Several employers may work on one site simultaneously, with the mix of contractors changing with the phases of the project; for example, the general contractor is present at all times, excavating contractors early, then carpenters, electricians and plumbers, followed by floor finishers, painters and landscapers. And as the work develops—for instance, as a building’s walls are erected, as the weather changes or as a tunnel advances—the ambient conditions such as ventilation and temperature change too.

Construction workers typically are hired from project to project and may spend only a few weeks or months at any one project. There are consequences for both workers and work projects. Workers must make and remake productive and safe working relationships with other workers whom they may not know, and this may affect safety at the work site. And in the course of the year, construction workers may have several employers and less than full employment. They might work an average of only 1,500 hours in a year while workers in manufacturing, for example, are more likely to work regular 40 hour weeks
and 2,000 hours per year. In order to make up for slack time, many construction workers have other jobs—and exposure to other health or safety hazards—outside of construction.

For a particular project, there is frequent change in the number of workers and the composition of the labor force at any one site. This change results both from the need for different skilled trades at different phases of a work project and from the high turnover of construction workers, particularly unskilled workers. At any one time, a project may include a large proportion of inexperienced, temporary and transient workers who may not be fluent in the common language. Although construction work often must be done in teams, it is difficult to develop effective, safe teamwork under such conditions.

Like the workforce, the universe of construction contractors is marked by high turnover and consists mainly of small operations. Of the 1.9 million construction contractors in the United States identified by the 1990 Census, only 28% had any full-time employees. Just 136,000 (7%) had 10 or more employees. The degree of contractor participation in trade organizations varies by country. In the United States, only about 10 to 15% of contractors participate; in some European countries, this proportion is higher but still involves less than half of contractors. This makes it difficult to identify contractors and inform them of their rights and responsibilities under pertinent health and safety or any other legislation or regulations.

As in some other industries, an increasing proportion of contractors in the United States and Europe consist of individual workers hired as independent contractors by prime- or sub-contractors who employ workers. Ordinarily, an employing contractor does not provide subcontractors with health benefits, workers’ compensation coverage, unemployment insurance, pension benefits or other benefits. Nor do prime contractors have any obligation to subcontractors under health and safety regulations; these regulations govern rights and responsibilities as they apply to their own employees. This arrangement gives some independence to individuals who contract for their services, but at the cost of removing a wide range of benefits. It also relieves employing contractors of the obligation to provide mandated benefits to individuals who are contractors. This private arrangement subverts public policy and has been successfully challenged in court, yet it persists and may become more of a problem for the health and safety of workers on
the job, regardless of their employment relationship. The US Bureau of Labor Statistics (BLS) estimates that 9% of the US workforce is self-employed, but in construction as many as 25% of workers are self-employed independent contractors.

**Health Hazards on Construction Sites**

Construction workers are exposed to a wide variety of health hazards on the job. Exposure differs from trade to trade, from job to job, by the day, even by the hour. Exposure to any one hazard is typically intermittent and of short duration, but is likely to reoccur. A worker may not only encounter the primary hazards of his or her own job, but may also be exposed as a bystander to hazards produced by those who work nearby or upwind. This pattern of exposure is a consequence of having many employers with jobs of relatively short duration and working alongside workers in other trades that generate other hazards. The severity of each hazard depends on the concentration and duration of exposure for that particular job. Bystander exposures can be approximated if one knows the trade of workers nearby. Hazards present for workers in particular trades are listed in table 2.

Each trade is listed below with an indication of the primary hazards to which a worker in that trade might be exposed. Exposure may occur to either supervisors or to wage earners. Hazards that are common to nearly all construction-heat, risk factors for musculoskeletal disorders and stress—are not listed.

The classifications of construction trades used here are those used in the United States. It includes the construction trades as classified in the Standard Occupational Classification system developed by the US Department of Commerce. This system classifies the trades by the principal skills inherent in the trade.

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brickmasons</td>
<td>Cement dermatitis, awkward postures, heavy loads</td>
</tr>
<tr>
<td>Stonemasons</td>
<td>Cement dermatitis, awkward postures, heavy loads</td>
</tr>
<tr>
<td>Hard tile setters</td>
<td>Vapour from bonding agents, dermatitis,</td>
</tr>
<tr>
<td>Occupation</td>
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</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Carpenters</td>
<td>Wood dust, heavy loads, repetitive motion</td>
</tr>
<tr>
<td>Drywall installers</td>
<td>Plaster dust, walking on stilts, heavy loads, awkward postures</td>
</tr>
<tr>
<td>Electricians</td>
<td>Heavy metals in solder fumes, awkward posture, heavy loads, asbestos dust</td>
</tr>
<tr>
<td>Electrical power installers and repairers</td>
<td>Heavy metals in solder fumes, heavy loads, asbestos dust</td>
</tr>
<tr>
<td>Painters</td>
<td>Solvent vapours, toxic metals in pigments, paint additives</td>
</tr>
<tr>
<td>Paperhangers</td>
<td>Vapours from glue, awkward postures</td>
</tr>
<tr>
<td>Plasterers</td>
<td>Dermatitis, awkward postures</td>
</tr>
<tr>
<td>Plumbers</td>
<td>Lead fumes and particles, welding fumes</td>
</tr>
<tr>
<td>Pipefitters</td>
<td>Lead fumes and particles, welding fumes, asbestos dust</td>
</tr>
<tr>
<td>Steamfitters</td>
<td>Welding fumes, asbestos dust</td>
</tr>
<tr>
<td>Carpet layers</td>
<td>Knee trauma, awkward postures, glue and glue vapour</td>
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<tr>
<td>Soft tile installers</td>
<td>Bonding agents</td>
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<tr>
<td>Concrete and terrazzo finishers</td>
<td>Awkward postures</td>
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<tr>
<td>Glaziers</td>
<td>Awkward postures</td>
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<tr>
<td>Insulation workers</td>
<td>Asbestos, synthetic fibres, awkward postures</td>
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<td>Paving, surfacing and tamping equipment operators</td>
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<td>Silica dust, heat</td>
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<td>Roofers</td>
<td>Roofing tar, heat, working at heights</td>
</tr>
<tr>
<td>Occupation</td>
<td>Hazards</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sheetmetal duct installers</td>
<td>Awkward postures, heavy loads, noise</td>
</tr>
<tr>
<td>Structural metal installers</td>
<td>Awkward postures, heavy loads, working at heights</td>
</tr>
<tr>
<td>Welders</td>
<td>Welding emissions</td>
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<tr>
<td>Solderers</td>
<td>Metal fumes, lead, cadmium</td>
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<tr>
<td>Drillers, earth, rock</td>
<td>Silica dust, whole-body vibration, noise</td>
</tr>
<tr>
<td>Air hammer operators</td>
<td>Noise, whole-body vibration, silica dust</td>
</tr>
<tr>
<td>Pile driving operators</td>
<td>Noise, whole-body vibration</td>
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<tr>
<td>Hoist and winch operators</td>
<td>Noise, lubricating oil</td>
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<tr>
<td>Crane and tower operators</td>
<td>Stress, isolation</td>
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<tr>
<td>Excavating and loading machine</td>
<td>Silica dust, histoplasmosis, whole-body vibration, heat stress, noise</td>
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<tr>
<td>operators</td>
<td></td>
</tr>
<tr>
<td>Grader, dozer and scraper operators</td>
<td>Silica dust, whole-body vibration, heat noise</td>
</tr>
<tr>
<td>Highway and street construction</td>
<td>Asphalt emissions, heat, diesel engine exhaust</td>
</tr>
<tr>
<td>workers</td>
<td></td>
</tr>
<tr>
<td>Truck and tractor equipment</td>
<td>Whole-body vibration, diesel engine exhaust</td>
</tr>
<tr>
<td>operators</td>
<td></td>
</tr>
<tr>
<td>Demolition workers</td>
<td>Asbestos, lead, dust, noise</td>
</tr>
<tr>
<td>Hazardous waste workers</td>
<td>Heat, stress</td>
</tr>
</tbody>
</table>

**Construction Hazards**

As in other jobs, hazards for construction workers are typically of four classes: chemical, physical, biological and social.

**Chemical hazards**

Chemical hazards are often airborne and can appear as dusts, fumes, mists, vapors or gases; thus, exposure usually occurs by inhalation, although some airborne hazards may
settle on and be absorbed through the intact skin (e.g., pesticides and some organic solvents). Chemical hazards also occur in liquid or semi-liquid state (e.g., glues or adhesives, tar) or as powders (e.g., dry cement). Skin contact with chemicals in this state can occur in addition to possible inhalation of the vapor resulting in systemic poisoning or contact dermatitis. Chemicals might also be ingested with food or water, or might be inhaled by smoking.

Several illnesses have been linked to the construction trades, among them:

- silicosis among sand blasters, tunnel builders and rock drill operators
- asbestosis (and other diseases caused by asbestos) among asbestos insulation workers, steam pipe fitters, building demolition workers and others
- bronchitis among welders
- skin allergies among masons and others who work with cement
- neurologic disorders among painters and others exposed to organic solvents and lead.

Elevated death rates from cancer of the lung and respiratory tree have been found among asbestos insulation workers, roofers, welders and some woodworkers. Lead poisoning occurs among bridge rehabilitation workers and painters, and heat stress (from wearing full-body protective suits) among hazardous-waste clean-up workers and roofers. White finger (Raynaud’s syndrome) appears among some jackhammer operators and other workers who use vibrating drills (e.g., stopper drills among tunnellers).

Alcoholism and other alcohol-related disease is more frequent than expected among construction workers. Specific occupational causes have not been identified, but it is possible that it is related to stress resulting from lack of control over employment prospects, heavy work demands or social isolation due to unstable working relationships.

**Physical hazards**

Physical hazards are present in every construction project. These hazards include noise, heat and cold, radiation, vibration and barometric pressure. Construction work often must be done in extreme heat or cold, in windy, rainy, snowy, or foggy weather or at night.
Ionizing and non-ionizing radiation is encountered, as are extremes of barometric pressure.

The machines that have transformed construction into an increasingly mechanized activity have also made it increasingly noisy. The sources of noise are engines of all kinds (e.g., on vehicles, air compressors and cranes), winches, rivet guns, nail guns, paint guns, pneumatic hammers, power saws, sanders, routers, planers, explosives and many more. Noise is present on demolition projects by the very activity of demolition. It affects not only the person operating a noise-making machine, but all those close-by and not only causes noise-induced hearing loss, but also masks other sounds that are important for communication and for safety.

Pneumatic hammers, many hand tools and earth-moving and other large mobile machines also subject workers to segmental and whole-body vibration.

Heat and cold hazards arise primarily because a large portion of construction work is conducted while exposed to the weather, the principal source of heat and cold hazards. Roofers are exposed to the sun, often with no protection, and often must heat pots of tar, thus receiving both heavy radiant and convective heat loads in addition to metabolic heat from physical labor. Heavy equipment operators may sit beside a hot engine and work in an enclosed cab with windows and without ventilation. Those that work in an open cab with no roof have no protection from the sun. Workers in protective gear, such as that needed for removal of hazardous waste, may generate metabolic heat from hard physical labor and get little relief since they may be in an air-tight suit. A shortage of potable water or shade contributes to heat stress as well. Construction workers also work in especially cold conditions during the winter, with danger of frostbite and hypothermia and risk of slipping on ice.

The principal sources of non-ionizing ultraviolet (UV) radiation are the sun and electric arc welding. Exposure to ionizing radiation is less common, but can occur with x-ray inspection of welds, for example, or it may occur with instruments such as flow meters that use radioactive isotopes. Lasers are becoming more common and may cause injury, especially to the eyes, if the beam is intercepted.
Those who work under water or in pressurized tunnels, in caissons or as divers are exposed to high barometric pressure. Such workers are at risk of developing a variety of conditions associated with high pressure: decompression sickness, inert gas narcosis, aseptic bone necrosis and other disorders.

Strains and sprains are among the most common injuries among construction workers. These, and many chronically disabling musculoskeletal disorders (such as tendinitis, carpal tunnel syndrome and low-back pain) occur as a result of traumatic injury, repetitive forceful movements, awkward postures or overexertion (see figure 1). Falls due to unstable footing, unguarded holes and slips off scaffolding (see figure 2) and ladders are very common.

*Jane Seegal*

**Biological hazards**

Biological hazards are presented by exposure to infectious micro-organisms, to toxic substances of biological origin or animal attacks. Excavation workers, for example, can develop histoplasmosis, an infection of the lung caused by a common soil fungus. Since there is constant change in the composition of the labor force on any one project, individual workers come in contact with other workers and, as a consequence, may become infected with contagious diseases—influenza or tuberculosis, for example. Workers may also be at risk of malaria, yellow fever or Lyme disease if work is conducted in areas where these organisms and their insect vectors are prevalent.

Toxic substances of plant origin come from poison ivy, poison oak, poison sumac and nettles, all of which can cause skin eruptions. Some wood dusts are carcinogenic, and some (e.g., western red cedar) are allergenic.

Attacks by animals are rare but may occur whenever a construction project disturbs them or encroaches on their habitat. This could include wasps, hornets, fire ants, snakes and many others. Underwater workers may be at risk from attack by sharks or other fish.
**Social hazards**

Social hazards stem from the social organization of the industry. Employment is intermittent and constantly changing, and control over many aspects of employment is limited because construction activity is dependent on many factors over which construction workers have no control, such as the state of an economy or the weather. Because of the same factors, there can be intense pressure to become more productive. Since the workforce is constantly changing, and with it the hours and location of work, and many projects require living in work camps away from home and family, construction workers may lack stable and dependable networks of social support. Features of construction work such as heavy workload, limited control and limited social support are the very factors associated with increased stress in other industries. These hazards are not unique to any trade, but are common to all construction workers in one way or another.

**Evaluating Exposure**

Evaluating either primary or bystander exposure requires knowing the tasks being done and the composition of ingredients and by-products associated with each job or task. This knowledge usually exists somewhere (e.g., material safety data sheets, MSDSs) but may not be available at the job site. With continually evolving computer and communications technology, it is relatively easy to obtain such information and make it available.

**Controlling Occupational Hazards**

Measuring and evaluating exposure to occupational hazards requires consideration of the novel manner in which construction workers are exposed. Conventional industrial hygiene measurements and exposure limits are based on 8-hour time-weighted averages. But since exposures in construction are usually brief, intermittent, varied but likely to be repeated, such measures and exposure limits are not as useful as in other jobs. Exposure measurement can be based on tasks rather than shifts. With this approach, separate tasks can be identified and hazards characterized for each. A task is a limited activity such as welding, soldering, sanding drywall, painting, installing plumbing and so on. As exposures are characterized for tasks, it should be possible to develop an exposure profile for an individual worker with knowledge of the tasks he or she performed or was near
enough to be exposed to. As knowledge of task-based exposure increases, one may develop task-based controls.

Exposure varies with the concentration of the hazard and the frequency and duration of the task. As a general approach to hazard control, it is possible to reduce exposure by reducing the concentration or the duration or frequency of the task. Since exposure in construction is already intermittent, administrative controls that rely on reducing the frequency or duration of exposure are less practical than in other industries. Consequently, the most effective way to reduce exposure is to reduce the concentration of hazards. Other important aspects of controlling exposure include provisions for eating and sanitary facilities and education and training.

**Decreasing exposure concentration**

For reducing exposure concentration, it is useful to consider the source, the environment in which a hazard occurs and the workers who are exposed. As a general rule, the closer controls are to a source, the more efficient and effective they are. Three general types of controls can be used to reduce the concentration of occupational hazards. These are, from most to least effective:

- engineering controls at the source
- environmental controls that remove the hazard from the environment
- personal protection provided to the worker.

**Engineering controls**

Hazards originate at a source. The most efficient way to protect workers from hazards is to change the primary source with some sort of engineering change. For example, a less hazardous substance can be substituted for one that is more hazardous. Non-respirable synthetic vitreous fibres can be substituted for asbestos, and water can be substituted for organic solvents in paints. Similarly, non-silica abrasives can replace sand in abrasive blasting (also known as sand blasting). Or a process can be fundamentally changed, such as by replacing pneumatic hammers with impact hammers that generate less noise and vibration. If sawing or drilling generates harmful dusts, particulate matter or noise, these processes could be done by shear cutting or punching. Technological improvements are
reducing the risks of some musculoskeletal and other health problems. Many of the changes are straightforward—for example, a two-handed screwdriver with a longer handle increases torque on the object and reduces stress on the wrists.

**Environmental controls**

Environmental controls are used to remove a hazardous substance from the environment, if the substance is airborne, or to shield the source, if it is a physical hazard. Local exhaust ventilation (LEV) can be used at a particular job with a ventilation duct and a hood to capture the fumes, vapors or dust. However, since the location of tasks that emit toxic materials changes, and because the structure itself changes, any LEV would have to be mobile and flexible in order to accommodate these changes. Mobile truck-mounted dust collectors with fans and filters, independent power sources, flexible ducts and mobile water supplies have been used on many job sites to provide LEV for a variety of hazard-producing processes.

The simple and effective method for controlling exposure to radiant physical hazards (noise, ultraviolet (UV) radiation from arc welding, infrared radiant (IR) heat from hot objects) is to shield them with some appropriate material. Plywood sheets shield IR and UV radiation, and material that absorbs and reflects sound will provide some protection from noise sources.

Major sources of heat stress are weather and hard physical labor. Adverse effects from heat stress can be avoided through reductions in the workload, provision of water and adequate breaks in the shade and, possibly, night work.

**Personal protection**

When engineering controls or changes in work practices do not adequately protect workers, workers may need to use personal protective equipment (PPE) (see figure 3). In order for such equipment to be effective, workers must be trained in its use, and the equipment must fit properly and be inspected and maintained. Furthermore, if others who are in the vicinity may be exposed to the hazard, they should either be protected or prevented from entering the area.
The use of some personal controls can create problems. For instance, construction workers often perform as teams and thus have to communicate with each other, but respirators interfere with communication. And full-body protective gear can contribute to heat stress because it is heavy and because body heat is not allowed to dissipate.

Having protective gear without knowing its limitations can also give workers or employers the illusion that the workers are protected when, with certain exposure conditions, they are not protected. For instance, there are no gloves currently available that protect for more than 2 hours against methylene chloride, a common ingredient in paint strippers. And there are few data on whether gloves protect against solvent mixtures such as those containing both acetone and toluene or both methanol and xylene. The level of protection depends on how a glove is used. In addition, gloves are generally tested on one chemical at a time and rarely for more than 8 hours.

**Eating and sanitary facilities**

A lack of eating and sanitary facilities may also lead to increased exposures. Often, workers cannot wash before meals and must eat in the work zone, which means they may inadvertently swallow toxic substances transferred from their hands to food or cigarettes. A lack of changing facilities at a worksite may result in transport of contaminants from the workplace to a worker’s home.

**Injuries and Illnesses in Construction**

**Fatal injuries**

Because construction involves a large proportion of the workforce, construction fatalities also affect a large population. For instance, in the United States, construction represents 5 to 6% of the workforce but accounts for 15% of work-related fatalities—more than any other sector. The construction sector in Japan is 10% of the workforce but has 42% of the work-related deaths; in Sweden, the numbers are 6% and 13%, respectively.

The most common fatal injuries among construction workers in the United States are falls (30%), transportation accidents (26%), contact with objects or equipment (e.g., struck by an object or caught in machinery or materials) (19%) and exposure to harmful substances
(18%), most of which (75%) are electrocutions from contact with electrical wiring, overhead power lines or electrically powered machinery or hand tools. These four types of events account for nearly all (93%) fatal injuries among construction workers in the United States (Pollack et al. 1996).

Among trades in the US, the rate of fatal injuries is highest among structural steel workers (118 fatalities per 100,000 full-time equivalent workers for 1992–1993 compared to a rate of 17 per 100,000 for other trades combined) and 70% of structural steel worker fatalities were from falls. Labourers experienced the greatest number of fatalities, with an annual average number of about 200. Overall, the rate of fatalities was highest for workers 55 years and older.

The proportion of fatalities by event differed for each trade. For supervisors, falls and transportation accidents accounted for about 60% of all fatalities. For carpenters, painters, roofers and structural steel workers, falls were most common, accounting for 50, 55, 70 and 69% of all fatalities for those trades, respectively. For operating engineers and excavating machine operators, transportation accidents were the most common causes, accounting for 48 and 65% of fatalities for those trades, respectively. Most of these were associated with dump trucks. Fatalities from improperly sloped or shored trenches continue to be a major cause of fatalities (McVittie 1995). The primary hazards in the skilled trades are listed in table.

A study of Swedish construction workers did not find a high overall work-related mortality rate, but did find high death rates for particular conditions.

Table. Construction occupations with excess standardized mortality rates (SMRs) and standardized incidence rates (SIRs) for selected causes.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Significantly higher SMRs</th>
<th>Significantly higher SIRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bricklayers</td>
<td>-</td>
<td>Peritoneal tumour</td>
</tr>
</tbody>
</table>
| Concrete workers | All causes,* all cancers,* stomach cancer, violent death,* accidental falls | Lip cancer, stomach and larynx cancer,*
<p>|                  |                                                                 | lung cancer&lt;sup&gt;b&lt;/sup&gt;                                      |
| Crane drivers    | Violent death*                                                 | -                                                             |</p>
<table>
<thead>
<tr>
<th>Drivers</th>
<th>All causes,* cardiovascular*</th>
<th>Lip cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulators</td>
<td>All causes,* lung cancer, pneumoconiosis, violent death*</td>
<td>Peritoneal tumour, lung cancer</td>
</tr>
<tr>
<td>Machine operators</td>
<td>Cardiovascular,* other accidents</td>
<td>-</td>
</tr>
<tr>
<td>Plumbers</td>
<td>All cancers,* lung cancer, pneumoconiosis</td>
<td>All cancers, pleural tumour, lung cancer</td>
</tr>
<tr>
<td>Rock workers</td>
<td>All causes,* cardiovascular,*</td>
<td>-</td>
</tr>
<tr>
<td>Sheet metal workers</td>
<td>All cancers,* lung cancer, accidental falls</td>
<td>All cancers, lung cancer</td>
</tr>
<tr>
<td>Woodworkers/carpenters</td>
<td>-</td>
<td>Nose and nasal sinus cancer</td>
</tr>
</tbody>
</table>

* Cancers or causes of death are significantly higher in comparison to all other occupational groups combined. “Other accidents” includes typical work-related injuries.

The relative risk for larynx cancer among concrete workers, compared to carpenters, is 3 times higher.

The relative risk for lung cancer among concrete workers, compared to carpenters, is almost double.


**Disabling or lost time injuries**

In the United States and Canada, the most common causes of lost time injuries are overexertion; being struck by an object; falls to a lower level; and slips, trips and falls on the same level. The most common category of injury is strains and sprains, some of which become sources of chronic pain and impairment. The activities most often associated with lost time injuries are manual materials handling and installation (e.g., installing dry-wall, piping or ventilation duct-work). Injuries occurring in transit (e.g., walking, climbing, descending) are also common. Underlying many of these injuries is the problem of housekeeping. Many slips, trips and falls are caused by walking through construction debris.

**Costs of Injuries and Illness**

Occupational injuries and illnesses in construction are very costly. Estimates for the cost of injuries in construction in the US range from $10 billion to $40 billion annually (Meridian Research 1994); at $20 billion, the cost per construction worker would be
US$3,500 yearly. Workers’ compensation premiums for three trades—carpenters, masons and structural iron workers—averaged 28.6% of payroll nationally in mid-1994 (Powers 1994). Premium rates vary enormously, depending on trade and jurisdiction. The average premium cost is several times higher than in most industrialized countries, where workers’ compensation insurance premiums range from 3 to 6% of payroll. In addition to workers’ compensation, there are liability insurance premiums and other indirect costs, including reduced work crew efficiency, clean-up (from a cave-in or collapse, for instance) or overtime necessitated by an injury. Such indirect costs can be several times the workers’ compensation award.

**Management for Safe Construction Work**

Effective safety programmes have several features in common. They are manifest throughout organizations, from the highest offices of a general contractor to project managers, supervisors, union officials and workers on the job. Codes of practice are conscientiously implemented and evaluated. Costs of injury and illness are calculated and performance is measured; those that do well are rewarded, those that do not are penalized. Safety is an integral part of contracts and subcontracts. Everybody—manager’s supervisors and workers—receives general, site-specific and site-relevant training and re-training. Inexperienced workers receive on-the-job training from experienced workers. In projects where such measures are implemented, injury rates are significantly lower than on otherwise comparable sites.

**Preventing Accidents and Injuries**

Entities in the industry with lower injury rates share several common characteristics: they have a clearly defined *policy statement* that applies throughout the organization, from top management to the project site. This policy statement refers to a specific code of practice that describes, in detail, the hazards and their control for the pertinent occupations and tasks at a site. *Responsibilities are clearly assigned* and standards of performance are stated. Failures to meet these standards are investigated and penalties imposed as appropriate. Meeting or exceeding standards is rewarded. An *accounting system* is used that shows the costs of each injury or accident and the benefits of injury prevention. *Employees or their representatives are involved* in establishing and
administering a programme of injury prevention. Involvement often occurs in the formation of a joint labor or worker management committee. Physical examinations are performed to determine workers’ fitness for duty and job assignment. These exams are provided when first employed and when returning from a disability or other layoff.

Hazards are identified, analyzed and controlled following the classes of hazards discussed in other articles in this chapter. The entire work site is inspected on a regular basis and results are recorded. Equipment is inspected to ensure its safe operation (e.g., brakes on vehicles, alarms, guards and so on). Injury hazards include those associated with the most common types of lost-time injuries: falls from heights or at the same level, lifting or other forms of manual materials handling, risk of electrocution, and risk of injury associated with either highway or off-road vehicles, trench cave-ins and others. Health hazards would include airborne particles (such as silica, asbestos, synthetic vitreous fibers, diesel particulates), gases and vapors (such as carbon monoxide, solvent vapor, engine exhaust), physical hazards (such as noise, heat, hyperbaric pressure) and others, such as stress.

Preparations are made for emergency situations and emergency drills are conducted as needed. Preparations would include assignment of responsibilities, provision of first aid and immediate medical attention at the site, communication at the site and with others off the site (such as ambulances, family members, home offices and labor unions), transportation, designation of health care facilities, securing and stabilizing the environment where the emergency occurred, identifying witnesses and documenting events. As needed, emergency preparedness would also cover means of escape from an uncontrolled hazard such as fire or flood.

Accidents and injuries are investigated and recorded. The purpose of reports is to identify causes that could have been controlled so that, in the future, similar occurrences can be prevented. Reports should be organized with a standardized record-keeping system to better facilitate analysis and prevention. To facilitate comparison of injury rates from one situation to another, it is useful to identify the pertinent population of workers within which an injury occurred, and their hours worked, in order to calculate an injury rate (i.e., the number of injuries per hour worked or the number of hours worked between injuries).
Workers and supervisors receive training and education in safety. This education consists of teaching general principles of safety and health, is integrated into task training, is specific for each work site and covers procedures to follow in the event of an accident or injury. Education and training for workers and supervisors is an essential part of any effort to prevent injuries and disease. Training about safe work practices and procedures have been provided in many countries by some companies and trade unions. These procedures include lockout and tag out of electrical power sources during maintenance procedures, use of lanyards while working at heights, shoring trenches, providing safe walking surfaces and so on. It is also important to provide site-specific training, covering unique features about the job site such as means of entry and exit. Training should include instruction about dangerous substances. Performance or hands-on training, demonstrating that one knows safe practices, is much better for instilling safe behavior than classroom instruction and written examination.

In the United States, training about certain hazardous substances is mandated by federal law. The same concern in Germany led to development of the Gefahrgut-Informationssystem der Berufsgenossenschaften der Bauwirtschaft, or GISBAU, programme. GISBAU works with manufacturers to determine the content of all substances used on construction sites. Equally important, the programme provides the information in a form to suit the differing needs of health staff, managers and workers. The information is available through training programmes, in print and on computer terminals at work sites. GISBAU gives advice about how to substitute for some hazardous substances and tells how to safely handle others. (See the chapter Using, storing and transporting chemicals.)

**Hazards Arising from Goods**

Hazardous substances are chemicals that can harm human health. While it might be obvious that some substances, such as acids or poisons, can cause harm, some health effects may not be so readily apparent. For example, in some cases dusts or vapors can also be hazardous substances.

Substances that cause skin irritation, allergies, cancer, birth defects, genetic mutations, and other health effects are also classified as hazardous substances. Health effects may
not be immediate and may occur over a long time period. A hazardous substance may be a simple chemical or it may be a mixture of several chemicals.

Chemical hazards are not limited to those substances obtained from a supplier and delivered in a labeled container with an SDS. Industrial processes such as welding or grinding may cause toxic fumes or dusts. Toxic atmospheres, or atmospheres without enough oxygen to sustain life, may develop in confined spaces or inadequately ventilated spaces.

Examples of some potentially hazardous substances include:

- paints
- drugs
- cosmetics
- cleaning chemicals
- degreasers
- detergents
- gas cylinders
- refrigerant gases
- pesticides
- herbicides
- diesel fuel
- petrol
- liquefied petroleum gas
- Welding fume.

Some hazardous substances are also classified as dangerous goods. Dangerous goods are those substances or articles with an immediate risk to health or safety. This includes physical risks such as flammability or corrosion

For a hazardous substance to have an effect it has to make contact with or enter the body – the way this occurs is called a route of entry. The main routes of entry are:

- swallowing – for example from hand contamination or food contact
- breathing in (inhalation) of atmospheric contaminants
- skin or eye contact – such as contact with dust on surfaces, splashes to the skin or eyes.

Some substances are so poisonous that swallowing a small amount will cause harm. Swallowing can occur from airborne dusts and sprays or during eating or smoking from unwashed hands or contaminated food.

There are three basic physical forms:

- solids (including dusts, fumes and smoke)
- liquids (including mists and vapors)
- gases (including vapors).

The physical form of a substance often depends on how it has been generated or how it is being used.

**Dusts**

Dusts are generally formed by grinding, abrasion, or crushing of larger solids. They can be generated by processes such as grinding, sanding or polishing. Examples are asbestos, coal, cotton, wood and wheat dust. Most industrial dusts are capable of being drawn into the human respiratory system (i.e. breathed in).

Whether dust gets into the body depends on the size of the dust particle. The two terms used are inspirable and respirable. Inspirable dust includes larger particles that tend to lodge in the upper respiratory tract. Respirable dusts are tiny particles that become lodged deep in the lungs.

Some dusts can also be a fire or explosion hazard. In form of a dust some substances become very reactive.

**Fumes**

Fumes are fine, solid, dust particles that are formed when metal is melted and some of the molten metal turns to vapor (for example by processes such as MIG welding or stick welding). As these metal vapors cool they condense into fumes.
Fume particles are so small they can be carried deep into the lungs. A single exposure to the fumes of metals, such as zinc oxide, copper oxide or magnesium oxide, can cause metal fume fever. Metal fume fever has symptoms that are very like a cold or the flu, except that the symptoms often clear up when employees are removed from the area where exposure is occurring.

Fumes can arise from molten metals such as in lead baths and metal casting. Welding is particularly hazardous when the metal has coatings such as lead or cadmium.

**Smoke**

This results from the incomplete burning of materials. Smoke consists of soot, liquid droplets and ash. Smoke also occurs during processes such as spot welding or oil quenching. Smoke particles are usually smaller than dust particles and can easily move deep into the lungs. Carbon particles in smoke can have other chemicals absorbed on to them that may cause lung irritation.

**Liquids**

Liquids may cause poisoning and/or physical injury if they are swallowed. Some can burn your skin (acute local effect). Many other liquids used in industry, including pesticides, solvents, paints, cutting fluids/oils and liquid fuels are also hazardous substances because they are easily absorbed through the skin into the blood. They can be absorbed more quickly if your skin is weakened in some way – for example if your skin is cracked, reddened, broken or very dry.

It is important to prevent spillage of liquids since they can rapidly spread. Other risks from liquids arise because they easily change to aerosols and vapors that move even more rapidly through the air. Flammable liquids can be very dangerous if spilt, since flammable vapors result and can ignite explosively.

Liquids that change easily into gases (e.g. petrol, alcohol) can spread widely through a workplace if the container has no lid or seal. These vapors can cause both exposure and fire hazards.
**Vapors**

Vapors can form when a liquid evaporates – i.e. moves into the air as a gas. Vapors can be inhaled easily. Vapors are even more hazardous in small enclosed spaces; they can form explosive atmospheres and easily reach toxic levels.

Liquids are more likely to become vapors (vaporize) when temperatures increase and/or when atmospheric pressure decreases. Liquids that vaporize easily at room temperature are said to have a high vapor pressure and low boiling point.

High vapor pressure/low boiling point liquids are also known as volatile liquids. The more volatile a liquid, the faster it will evaporate. It is difficult to control the risks for volatile liquids because they are so likely to change to vapors. Vapor from flammable liquid can be explosive.

**Mists, fogs and aerosols**

Mists, fogs and aerosols consist of fine liquid droplets suspended in the air. Mists can be formed in the workplace when machine and lubricating oils are used (for example oil mists from cutting and grinding operations and pesticide mists formed from spraying operations). Steam cleaning spray jets can also produce mists.

Aerosols are often generated when liquids are handled too vigorously or sprayed. Usually the size of the droplets in an aerosol is so small that they remain suspended for long enough to be widely dispersed.

**Gases**

Gases can be a hazard because they disperse in the air very quickly. Air is a gas made up mainly of nitrogen and oxygen with a small amount of other gases. Gases can be hazardous to your health if they are toxic or take the place of oxygen needed to breathe.

Human lungs absorb oxygen, but also can absorb other gases easily. These gases enter the blood stream and are carried directly to other parts of the body with rapid effects. Carbon monoxide is an example of a gas that readily enters the blood stream. This can be
generated by vehicle engines such as forklift trucks and is a problem in enclosed spaces such as stores.

Non-toxic gases can be hazardous if they are allowed to build up to the point that they are taking up the space that would normally be occupied by the oxygen needed to stay alive. This will cause death by asphyxiation. Some gases have no detectable odor or color thus adding an increased risk because the presence of the gas cannot be detected.

Hazardous substances that are used in the workplace without proper exposure controls may harm the health of all those exposed. These adverse health effects can be immediate, or appear days, weeks, months or even years after exposure.

Some hazardous substances produce few, if any, obvious symptoms until the onset of illness. For example, in the case of asbestos exposure, symptoms of illness usually do not show up until 20 or 30 years later.

Some other chemicals can have both short-term (perhaps coughing) and long-term symptoms (such as cancer) that do not appear until years after exposure. For example, some solvents can produce headaches, nausea and vomiting soon after exposure and increase the risk of cancer in the long term.

Typical symptoms which can indicate exposure to a hazardous substance are:

- eye irritation
- skin rashes
- difficulty in breathing/shortness of breath
- headaches, confusion, fatigue
- Cold or flu symptoms.

However some very serious chemical exposures have no warning symptoms.

The effects of a hazardous substance depend on:

- the toxicity – the capacity to cause harm
- the level of exposure to the chemical – the dose the body actually receives
- individual susceptibility.
The risk of a hazardous substance is determined by a combination of dose and toxicity. The disability sector is varied and diverse. Chemicals may be encountered in a range of work locations including offices, day care programs, client’s homes and disability enterprise workplaces. Not all these chemicals are classified as hazardous according to the legislation but still may have the propensity to affect an individual due to specific sensitivities. The label of the substance should indicate if the substance is potentially hazardous. However, general risk management principles apply to all chemicals and to Hazardous Substances in particular.

**Legal obligations**

Person conducting business or undertaking to obtain and give access to safety data sheets

(1) A person conducting a business of undertaking at a workplace must obtain the current safety data sheet for hazardous chemical prepared in accordance with these Regulations from the manufacturer, importer or supplier of the hazardous chemical in the following circumstances:

(a) either:

(i) not later than when the hazardous chemical is first supplied for use at the workplace; or

(ii) if the person is not able to obtain the safety data sheet under subparagraph (i) - as soon as practicable after the hazardous chemical is first supplied to the workplace but before the hazardous chemical is used in the workplace;

(b) If the safety data sheet for the hazardous chemical is amended either:

(i) Not later than when the hazardous chemical is first supplied to the work placed after the safety data sheet is amended; or

(ii) if the person is not able to obtain the amended safety data sheet under subparagraph (i) - as soon as practicable after the hazardous chemical is first supplied to the workplace after the safety data sheet is amended and before the hazardous chemical is supplied is used at the workplace.
(2) The hazardous chemical is taken to be *first supplied* to a workplace if the supply is the first of the hazardous chemical to the workplace for 5 years.

(3) The person must ensure that the current safety data sheet for the hazardous chemical is readily accessible to:

(a) a worker who is involved in using, handling or storing the hazardous chemical the workplace; and

(b) an emergency service worker, or anyone else, who is likely to be exposed to the hazardous chemical at the workplace.

(4) Sub regulations (1) and (3) do not apply to a hazardous chemical that:

(a) Is in transit; or

(b) If a person conducting business or undertaking at the workplace is a retailer - is:

(i) A consumer product; and

(ii) Intended for supply to other premises; or

(c) is a consumer product and it is reasonably for seeable that the hazardous chemical will be used at the workplace only in:

(i) quantities that are consistent with household use; and

(ii) a way that is consistent with household use; and

(iii) A way that is incidental to the nature of the work carried out by a worker using the hazardous chemical.

(5) In the circumstances referred to in sub regulation (4), the person must ensure that sufficient information about the safe use, handling, and storage of the hazardous chemical is readily accessible to:

(a) a worker at the workplace; and

(b) an emergency service worker, or anyone else, who is likely to be exposed to the hazardous chemical in the workplace.
(6) The person must ensure that the current safety data sheet for hazardous chemical is readily accessible to a person at the workplace if the person:

(a) is likely to be affected by the hazardous chemical; and

(b) Asks for the safety data sheet.

*Consumer product* means a thing that:

(a) Is packed or repacked primarily for use by a household consumer or for use in an office; and

(b) if the thing is packed or repacked primarily for use by a household consumer - is packed in the way and quantity in which it is intended to be used by a household consumer, and

(c) If the thing is packed or repacked primarily for use in an office - is packed in a way and quantity in which it is intended to be used for office work.

Disability Service providers are required to do the following related to hazardous substances:

- Obtain a Safety Data Sheet (SDS) from the supplier of the hazardous substance or dangerous goods either before, or on the first occasion, on which the substance is supplied. This mirrors the supplier’s duty to provide SDS. These SDS may be transmitted in electronic form. Where an SDS has not been provided, it may be requested from the manufacturer or importer. The SDS of a hazardous substance will assist risk assessment of the use of the hazardous substance (or dangerous goods) and any necessary controls to be established in the workplace.

- Ensure that the SDS is accessible to all workers likely to be exposed to the substance either in paper or computerized form;

- Ensure that workers read and understand the contents of the SDS

- Ensure that all containers of hazardous substances are appropriately labeled
• Ensure that any container into which a hazardous substance is decanted is clearly labeled with product name and any relevant risk and safety phrases if the product is to be used within 12 hours and with a full label if to be held longer.

• Maintain a register of hazardous substances and dangerous goods used or produced in the workplace. ADEs may prefer to use a chemical storage register depending on type and amount of chemicals used.

• Ensure appropriate placarding of tanks or bulk stores containing dangerous goods

• Ensure that risk assessments are undertaken and risk controls implemented. At a minimum risk controls must be equivalent to the handling and storage requirements listed in the safety data sheet.

• Ensure that an induction and training program is implemented which incorporates the following elements:

  (a) The labeling of containers of hazardous substances, the information that each part of the label provides and why the information is being provided.

  (b) The availability of SDS for hazardous substances, how to access the SDS, and the information that each part of the SDS provides.

  (c) Information about hazardous substances to which workers are or may be exposed in the course of their work. Information should include the nature of the hazards, risks to health arising from exposure, the degree of exposure and routes of entry of the hazardous substances into the body. This includes information on the forms of hazardous substances including dusts, fumes and other atmospheric contaminants.

  (d) The risk assessment process and how the worker can contribute.

  (e) The work practices and procedures to be followed in the use, handling, processing, storage, transportation, cleaning up and disposal of hazardous substances.

  (f) The measures used to control exposure to hazardous substances, including any information that the worker requires for the correct use and maintenance of control measures.

  (g) The proper use and fitting of personal protective equipment.
(h) The procedures to be followed in case of an emergency involving hazardous substances or dangerous goods, including any special decontamination procedures to be followed.

(i) First aid and incident reporting procedures to be followed in case of injury or illness.

(j) The nature of, and reasons for, any monitoring required and access to the results of monitoring.

(k) The nature of, and reasons for, any health surveillance required in order to detect the effects of exposure to a hazardous substance.

(l) The workers’ rights to be advised of the intention to use a new hazardous substance where they are likely to be exposed in the course of their work and the right to be consulted in the process of risk assessment of a hazardous substance.

(m) Workers’ rights and obligations in relation to health surveillance.

(n) Duties under the WHS Regulation of suppliers, disability service providers and workers.

The amount of detail and extent of training required will depend on the nature of the hazard associated with the work activity and the complexity of the work procedures and control measures required to minimize the risk of exposure. In this regard, the risk assessment process provides important guidance.

All training should be reviewed on a regular basis and records maintained on training conducted and the contents of such training.

**Risk Management and Hazardous Substances**

Under the *Work Health and Safety Act (WHS Act)* and *Work Health and Safety Regulation (the Regulation)* disability service providers must ensure the health, safety and welfare of workers in relation to the use of hazardous substances.

Components of Risk Management – Reference Source ‘Work Cover NSW Hazpak Guide’
1. **IDENTIFY** – the potential exposure to hazardous substances whilst undertaking work tasks

2. **ASSESS** – the risk, the nature and severity of the potential health effects and the degree of exposure that could occur i.e. what injury can occur to the person. You will then come up with a *risk ranking*

3. **CONTROL** – once you have completed the assessment, you need to identify controls or measures to either eliminate the risk or reduce it to a low as reasonably practicable (ALARP)

4. **REVIEW** – controls and procedures, where handling of hazardous substances is a component of ongoing care.

For end use products, the SDS should provide sufficient information on control measures, such as appropriate personal protective equipment (PPE). Examples of end use products are paints, pesticides, and adhesives.

For these simple and obvious risk assessments, the manager is required to note only the completion of the assessment in the register. No further report or record is required.

For some work a more detailed risk assessment may be necessary. These situations include those where either of the following applies:

- there is uncertainty about the degree of risk
- there is a significant risk to health, for example, exposure to a hazardous substance may be high and/or the nature of the health hazard is serious (this is particularly relevant for a listed carcinogen or a substance containing a listed carcinogen)
- more complex chemical processes and/or exposures are involved.

A more detailed risk assessment may include obtaining additional information about health hazards, a thorough evaluation of the work to determine exposures (including atmospheric monitoring or biological monitoring) where appropriate), and examination or testing of existing control measures. In such cases, the WHS Regulation requires a written report to be prepared.
Responsibility for ensuring a risk assessment is carried out lies with the organization (or self-employed person). It is anticipated that the assessment will usually be done by a supervisor or manager of the workplace, in cooperation with the relevant workers.

The assessment must be undertaken in consultation with the workers and their representatives. A person carrying out a risk assessment should have sufficient knowledge and skills to evaluate the health risks to workers arising from operations involving hazardous substances in the workplace. A simple risk assessment would require at least an ability to interpret a SDS.

A more complex assessment may require the assistance of relevant professionals, for example an occupational hygienist, with elements of an assessment that require special expertise.

Consultation between management, workers, clients and, if appropriate, their families or advocates is an important part of the hazard identification process.

**Eliminate or control** the risks. Ensure that work practices are designed to eliminate risk and if this is not possible the hierarchy of controls should be considered.

**The Hierarchy of Control – ‘as low as reasonably practicable’**

There are six ways to deal with hazards or control risks to health and safety

1. **Eliminate** - the hazard or risk e.g. Using a physical process rather than a chemical process to clean an object, using clips, clamps or bolts instead of adhesive, purchasing supplies of a material in a ready cut and sized form rather than carrying out a dust producing cutting process on site.

2. **Substitute** - substitute the substance or process for something that gives rise to a lesser risk e.g. replace a chlorinated degreasing solvent with a detergent, use a water-based pain in place of an organic solvent-based pain, use a substance in paste or pellet form rather than a dusty powder, applying paint by brush rather than aerosol.

3. **Isolation** – isolate the hazard, separate the hazard in time or space from the person at risk e.g. the remote operation of a process, the use of a closed work
system such as a glove bag, which contains the substance within the bag and protects the employee from the substance.

4. **Engineer** – plant or process that minimize generation of a hazardous substance, suppress or contain the hazardous substance of limit the area of contamination in the event of spills or leaks e.g. enclosure or partial enclosure, local exhaust ventilation, vapor barriers, process automation.

5. **Administration** – safe work practices such as use of warning signs, reduce period of exposure by limiting access, rotation of staff, regular cleaning of work areas and removal of waste, prohibiting eating, drinking and smoking in contaminated areas, vacuuming dust, keeping lids on containers when not in use, facilities for decontamination of work clothes.

6. **Personal protective equipment** - this should not be the only control used unless it is impracticable to implement any of the above. Staff must be trained in the limitations, correct selection, application, storage etc of the equipment.

The WHS Regulation specifies measures to be taken for the following processes:

- asbestos assessment and removal and
- lead processes and lead risk work.

Consult the WHS Regulation for details.

A potentially unknown specific risk which may arise for support workers exists when they are working with clients who are receiving cytotoxic drug therapy. A summary of issues and control strategies has been prepared.

Ongoing monitoring and review is an integral part of risk management. After applying controls to eliminate or reduce identified hazards, it is important to assess their effectiveness. Some controls might create other, unforeseen hazards. It is important to continue to consultation with everybody involved.

You must review your risk assessment if:

- there is evidence that it is no longer valid
- an illness or injury occurs
• A significant change occurs in work practices or procedures to which the risk assessment relates.

**Emergency Procedures:**

In spite of the implementation of all practicable control measures, a leak, spill or uncontrolled release of a hazardous substance could still occur. Established emergency procedures, procedures for safe disposal of the substance and sufficient suitable personal protective equipment should be used, where appropriate, to enable the source of the release to be safely identified and repairs made. All persons not directly concerned with the emergency should be excluded from the area of contamination. Consult the relevant SDS for advice.

**Worker Responsibilities:**

Workers have a responsibility to maintain safe work practices to the extent that they are capable. This is specifically addressed in work health and safety legislation and is dependent on adequate induction, training and supervision by the disability service organization.

Workers should therefore use the control measures in the way that they are intended to be used, and in particular should carry out the following:

(a) Cooperate with their manager in performing the risk assessments of hazardous substances in the workplace.

(b) Participate in suitable induction and training programs.

(c) Use the control measures provided for hazardous substances, plant and processes.

(d) Wear, in a proper manner, the personal protective equipment provided.

(e) Store personal protective equipment in the accommodation provided when it is not in use.

(f) Remove from their person any protective equipment that could cause contamination, and wash before eating, drinking or smoking.
(g) Practice a high standard of personal hygiene, and make proper use of the facilities provided for washing, showering or bathing and for eating and drinking.

(h) Report promptly to their supervisor, any defects discovered in any control measure, device, facility, label or item of personal protective equipment that may affect compliance with the provisions of the WHS Regulation.

(i) Cooperate with management in the conduct of appropriate monitoring or health surveillance programs that arise from risk assessments.

**Miscellaneous Hazards**

**(Hazard Class 9)**

1 **Definition**

A *miscellaneous hazardous material* is a substance or article that presents a hazard during transportation but does not meet the definition of any other hazard class.

Miscellaneous hazardous materials include:

a. Any material that has an anesthetic, noxious, or other similar property that could cause extreme annoyance or discomfort to a flight crew member.

b. Any elevated temperature material, hazardous substance, hazardous waste (other than Division 6.2 medical waste), or marine pollutant.

Examples of miscellaneous hazardous materials (not all of which are mailable) include solid dry ice, primary (non–rechargeable) lithium batteries, magnetized materials, elevated temperature substances, environmentally hazardous substances, life–saving appliances (i.e., automobile air–bags), and asbestos.

2 **Mailability**

a. *International Mail*. All miscellaneous hazardous materials are prohibited, except for certain magnetized materials as permitted in 349.242a and IMM 136g.

b. *Domestic Mail*. A miscellaneous hazardous material that can be reclassed as an ORM-D material and renamed as a consumer commodity (ID8000) is permitted. Only UN3077, UN3082, UN3175, UN 3334, and UN3335 class 9 materials are
mail able by air transportation; mail pieces including eligible quantities of these materials must be marked with the proper shipping name “Consumer Commodity.”

**Non mail able Class 9 Materials**

The following materials are prohibited:

a. All Class 9 materials that cannot qualify as an ORM–D material, except dry ice and magnetized materials.

b. All magnetized materials that have a measurable magnetic field strength greater than 0.00525 gauss at 15 feet.

c. For air transportation, all magnetized materials that can cause a compass deviation at a distance of 7 feet or more.

d. In domestic mail via air transportation, dry ice in quantities exceeding 5 pounds per mail piece.

e. For domestic and international mailings, primary (non rechargeable) lithium batteries are prohibited via air transportation if the batteries are shipped *without* the equipment they operate (individual batteries). In addition, lithium batteries are prohibited in international mailings when they are mailed *with* the equipment they are intended to operate.

**349.22 Mail able Class 9 Materials**

**349.221 Primary Lithium (Non rechargeable) Cells and Batteries — Domestic**

For domestic mailings only, small consumer-type primary lithium cells or batteries (lithium metal or lithium alloy) like those used to power cameras and flashlights are mail able domestically under the following conditions. See 622 or IMM 136 when mailing batteries internationally or to APO, FPO, or DPO destinations.

a. *General.* The following restrictions apply to the mail ability of all primary lithium (non rechargeable) cells and batteries:

   1. Each cell must contain no more than 1.0 gram (g) of lithium content per cell.
2. Each battery must contain no more than 2.0 g aggregate lithium content per battery.

3. Each cell or battery must meet the requirements of each test in the UN Manual of Tests and Criteria, part III, and subsection 38.3 as referenced in DOT’s hazardous materials regulation at 49 CFR 171.7.

4. All outer packages must have a complete delivery and return address.

b. **Installed in Equipment.** The following additional restrictions apply to the mailing of primary cells or batteries properly installed in the equipment they operate:

   1. The batteries installed in the equipment must be protected from damage and short circuit.
   
   2. The equipment must be equipped with an effective means of preventing it from being turned on or activated.
   
   3. The equipment must be cushioned to prevent movement or damage and be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail.
   
   4. The mail piece must not exceed 11 pounds.

c. **Mailed With Equipment.** The following additional restrictions apply to the mailing of primary cells or batteries shipped with (but not installed in) the device or equipment being mailed:

   1. The shipment cannot contain more batteries than the number needed to operate the device.
   
   2. The primary lithium cells and batteries must be packaged separately and cushioned to prevent movement or damage.
   
   3. The shipment must be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail.
   
   4. The outside of the package must be marked on the address side “Package Contains Primary Lithium Batteries.”
   
   5. The mail piece must not exceed 11 pounds.
d. *Mailed Without Equipment.* The following additional restrictions apply to the mailing of primary cells or batteries without equipment (individual batteries):

1. The primary lithium cells and batteries must be mailed in “the originally sealed packaging.”
2. The sealed packages of batteries must be separated and cushioned to prevent short circuit, movement, or damage.
3. The shipment must be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail.
4. They may only be sent via surface transportation.
5. The outside of the package must be marked on the address side “Surface Mail Only, Primary Lithium Batteries—Forbidden for Transportation aboard Passenger Aircraft.”
6. The mail piece must not exceed 5 pounds.

349.222 Secondary Lithium-ion (Rechargeable) Cells and Batteries — Domestic

For domestic mailings only, small consumer-type lithium-ion cells and batteries like those used to power cell phones and laptop computers are mailable domestically under the following conditions.

a. *General.* The following additional restrictions apply to the mail ability of all secondary (rechargeable) lithium-ion cells and batteries:

1. The lithium content must not exceed 20 Wh (Watt-hour rating) per cell.
2. The total aggregate lithium content must not exceed 100 Wh per battery.
3. Each cell or battery must meet the requirements of each test in the UN Manual of Tests and Criteria, part III, and subsection 38.3 as referenced in DOT’s hazardous materials regulation at 49 CFR 171.7.
4. The mail piece must not contain more than three batteries.
5. All outer packages must have a complete delivery and return address.

b. *Installed in Equipment.* The following additional restrictions apply to the mailing of secondary cells or batteries properly installed in equipment they operate:
1. The batteries installed in the equipment must be protected from damage and short circuit.

2. The equipment must be equipped with an effective means of preventing it from being turned on or activated.

3. The equipment must be cushioned to prevent movement or damage and be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail. The shipment must be mailed in a strong outer package.

c. Mailed With Equipment. The following additional restrictions apply to the mailing of secondary cells or batteries shipped with (but not installed in) the device or equipment being mailed:

   1. The shipment cannot contain more batteries than the number needed to operate the device up to three batteries.

   2. The secondary lithium cells and batteries must be packaged separately and cushioned to prevent movement or damage.

   3. The shipment must be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail.

   4. The outside of the package must be marked on the address side “Package Contains Lithium-ion Batteries (no lithium metal).”

d. Mailed Without Equipment. The following additional restrictions apply to the mailing of secondary cells or batteries without equipment (individual batteries):

   1. The secondary lithium cells and batteries must be mailed in “the originally sealed packaging”, and the package may contain no more than three batteries.

   2. The sealed packages of batteries must be separated and cushioned to prevent short circuit, movement, or damage.

   3. The shipment must be contained in a strong enough sealed package to prevent crushing of the package or exposure of the contents during normal handling in the mail.
4. The outside of the package must be marked on the address side “Package Contains Lithium-ion Batteries (no lithium metal).”

**Dry Ice**

**General**

Dry ice is primarily used to keep other items cool. The items being cooled can be either mail able hazardous materials or nonhazardous items, such as medical specimens or foods.

**Characteristics and Precautions**

Dry ice (carbon dioxide solid) is produced by expanding liquid carbon dioxide to vapor and compacting the material into blocks. When dry ice converts (dissipates) to a gaseous form, it takes in heat from its surroundings. The resulting gas is heavier than air and can cause suffocation in confined areas as air is displaced. When dry ice is enclosed in a thick metal or other restrictive type of container, internal pressure builds up and could cause the container to rupture or explode. Mail pieces containing dry ice must be handled with care because it’s very low temperature (about −110° F or −79° C) can cause severe burns to skin upon direct contact.

**Dry Ice Mail ability**

Dry ice is permitted to be mailed when it is used as a refrigerant to cool the content of a mail able hazardous or nonhazardous material. Packages containing dry ice must be packed in containers that permit the release of carbon dioxide gas and conform to 49 CFR 173.217 and 175.10(a)(13). Mail pieces containing dry ice are subject to the following conditions, as applicable:

a. **International Mail.** Dry ice is prohibited.

b. **Domestic Mail via Air Transportation.** Dry ice is permitted in quantities of up to 5 pounds per mail piece. Mail pieces containing dry ice are subject to the conditions for Packaging Instruction 9A in Appendix C, as applicable.

c. **Domestic Mail via Surface Transportation.** A mail piece sent via surface transportation (i.e., at Standard Mail rates) may contain more than
5 pounds of dry ice. Mail piece preparation is subject to the conditions for Packaging Instruction 9A in Appendix C.

_Note:_ A mail piece that is prepared for surface transportation _must not, under any circumstances_, be routed via air transportation.

### 349.24 Magnetized Materials

A magnetized material is not classified within any of the nine hazard classes. Such material is regulated as a hazardous material only if offered for carriage on air transportation and when it has a magnetic field strength capable of causing the deviation of aircraft instruments.

#### 349.241 Definition

A magnetized material is any article that has a magnetic field strength capable of causing the deviation of aircraft instruments. A magnetized material is regulated as a hazardous material when it is presented for air transportation and has a measurable magnetic field strength greater than 0.00525 gauss at 15 feet. Magnetized materials include magnets and magnetized devices such as magnetrons and light meters of sufficient strength to possibly cause erroneous aircraft compass readings.

#### 349.242 Mail ability

Magnetized materials that have a magnetic field strength of 0.002 gauss or more at a distance of 7 feet from any point on the surface of the outer packaging are mail able via air transportation if properly packaged. Magnetized materials that have field strength greater than 0.00525 gauss at 15 feet are non mail able under any conditions. The following requirements also apply:

a. _International Mail_. Magnetized materials are prohibited except for those that cannot cause a compass deviation at a distance of 7 feet or more. See 622.4.

b. _Domestic Mail via Air Transportation_. Magnetized materials that can cause a compass deviation at 7 feet or more are prohibited. A magnetized material is mail able if it is not capable of causing a compass deviation at a distance of 7 feet or more. Mail piece preparation is subject to the conditions for Packaging Instruction
9B in Appendix C. The address side of the outer packaging must bear the magnetized material warning label shown in Exhibit 349.242b.

c. Domestic Mail via Surface Transportation. Magnetized material is not regulated as a hazardous material when transported via surface transportation.

**Warning Label for Magnetized Materials**

![Warning Label for Magnetized Materials](image)

**Packaging**

For mail able Class 9 materials, the following packaging requirements as detailed in the Packaging Instructions in Appendix C apply:

a. Packaging Instruction 9A must be followed for mail able quantities of dry ice.

b. Packaging Instruction 9B must be followed for mail able types of magnetized materials.

c. Packaging Instruction 9C must be followed for Class 9 miscellaneous hazardous materials that are eligible to be reclassed as mail able ORM–D materials.

d. Packaging Instruction 9D must be followed for lithium and lithium-ion cells and batteries.

**349.4 Marking and Documentation**

Parcels containing mail able class 9 material must be marked as follows:

a. For air transportation, a mail able Class 9 material that can be reclosed as an ORM-D material must be plainly and durably marked on the address side with “ORM-D AIR” immediately following or below the proper shipping name (Consumer Commodity). A shipper’s declaration for dangerous goods that is prepared in triplicate must be affixed to the outside of the mail piece.
b. For surface transportation, a mail able material that can be reclassed as an ORM-D material must be plainly and durably marked on the address side with “Surface Mail Only” and “ORM-D” immediately following or below the proper shipping name (Consumer Commodity).

c. Optionally, mail able limited quantity (ORM-D) material may be marked with an approved DOT limited quantity square-on-point marking (see Exhibit 325b). The plain square-on-point marking is used for shipments sent by surface transportation, and the square-on-point marking including the symbol “Y” superimposed in the center is used for shipments sent by air transportation. The following also apply:

1. Markings must be durable, legible, and readily visible.

2. The marking must be applied on at least one side or one end of the outer packaging. The border forming the square-on-point must be at least 2 mm in width, and the minimum dimension of each side must be 100 mm, unless the package size requires a reduced size marking of no less than 50 mm on each side.

3. For surface transportation, the top and bottom portions of the square-on-point and the border forming the square-on-point must be black, and the center must be white or of a suitable contrasting background. Surface shipments containing qualifying ORM-D material bearing the square-on-point limited quantity marking are not required to be marked with the shipping name and identification number.

4. For transportation by aircraft, the top and bottom portions of the square-on-point and the border forming the square-on-point must be black, and the center must be white or of a suitable contrasting background. The symbol “Y” must be black, located in the center of the square-on-point, and clearly visible. Mail pieces intended for transport by air and containing eligible limited quantity material of DOT Classes 2, 3, and 6.1, or eligible hazard class 9 limited quantity material categorized in UN3077, UN3082, UN3175, UN3334, or UN3335, must be marked with the proper
shipping name “Consumer Commodity” and identification number “ID8000.” Shipments must display an approved DOT Class 9 hazardous material warning label.

**Fire Protection Systems**

*Fire protection* is the study and practice of mitigating the unwanted effects of potentially destructive fires.\(^1\) It involves the study of the behavior, compartmentalization, suppression and investigation of fire and its related emergencies, as well as the research and development, production, testing and application of mitigating systems. In structures, be they land-based, offshore or even ships, the owners and operators are responsible to maintain their facilities in accordance with a design-basis that is rooted in laws, including the local building code and fire code, which are enforced by the Authority Having Jurisdiction. Buildings must be constructed in accordance with the version of the building code that is in effect when an application for a building permit is made. Building inspectors check on compliance of a building under construction with the building code. Once construction is complete, a building must be maintained in accordance with the current fire code, which is enforced by the fire prevention officers of a local fire department. In the event of fire emergencies, Firefighters, fire investigators, and other fire prevention personnel called to mitigate, investigate and learn from the damage of a fire. Lessons learned from fires are applied to the authoring of both building codes and fire codes.

In the United States, this term is used by engineers and code officials when referring only to active and passive fire protection systems, and does usually not encompass fire detection systems such as fire alarms or smoke detection.

**Goals:**

Fire protection has three major goals:

- **Continuity of operations** - on a public scale, this is intended to prevent the interruption of critical services necessary for the public welfare (e.g., a 911 emergency call center).
- **Property protection** - on a public scale, this is intended to prevent area wide conflagrations. At an individual building level, this is typically an insurance consideration (e.g., a requirement for financing), or a regulatory requirement.

- **Life safety** - the minimum standard used in fire and building codes

### Classifying Fires:

When deciding on what fire protection is appropriate for any given situation, it is important to assess the types of fire hazard that may be faced.

Some jurisdictions operate systems of classifying fires using code letters. Whilst these may agree on some classifications, they also vary. Below is a table showing the standard operated in Europe and Australia against the system used in the United States?

<table>
<thead>
<tr>
<th>Type of Fire</th>
<th>Australia</th>
<th>European</th>
<th>North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fires that involve flammable solids such as wood, cloth, rubber, paper, and some types of plastics.</td>
<td>Class A</td>
<td>Class A</td>
<td>Class A</td>
</tr>
<tr>
<td>Fires that involve flammable liquids or liquefiable solids such as petrol/gasoline, oil, paint, some waxes &amp; plastics, but not cooking fats or oils</td>
<td>Class B</td>
<td>Class B</td>
<td></td>
</tr>
<tr>
<td>Fires that involve flammable gases, such as natural gas, hydrogen, propane, butane</td>
<td>Class C</td>
<td>Class C</td>
<td></td>
</tr>
<tr>
<td>Fires that involve combustible metals, such as sodium, magnesium, and potassium</td>
<td>Class D</td>
<td>Class D</td>
<td>Class D</td>
</tr>
<tr>
<td>Fires that involve any of the materials found in Class A and B fires, but with the introduction of an electrical appliances, wiring, or other electrically</td>
<td>Class E¹</td>
<td>(Class E) now no longer in the</td>
<td>Class C</td>
</tr>
</tbody>
</table>
energized objects in the vicinity of the fire, with a resultant electrical shock risk if a conductive agent is used to control the fire.

| Fires involving cooking fats and oils. The high temperature of the oils when on fire far exceeds that of other flammable liquids making normal extinguishing agents ineffective. | European standards |
|---|---|---|
| Class F | Class F | Class K |

Technically there is no such thing as a "Class E" fire, as electricity itself does not burn. However it is considered a dangerous and very deadly complication to a fire, therefore using the incorrect extinguishing method can result in serious injury or death. Class E, however generally refers to fires involving electricity, therefore a bracketed E, "(E)" denoted on various types of extinguishers.

Fires are sometimes categorized as "one alarm", "two alarm", "three alarm" (or higher) fires. There is no standard definition for what this means quantifiably, though it always refers to the level response by the local authorities. In some cities, the numeric rating refers to the number of fire stations that have been summoned to the fire. In others, the number counts the number of "dispatches" for additional personnel and equipment.

**Components:**

Structural fire protection (in land-based buildings, offshore construction or onboard ships) is typically achieved via three means:

- Passive fire protection (use of integral, fire-resistance rated wall and floor assemblies that are used to form fire compartments intended to limit the spread of fire, or occupancy separations, or firewalls, to keep fires, high temperatures and flue gases within the fire compartment of origin, thus enabling firefighting and evacuation)

- Active fire protection (manual and automatic detection and suppression of fires, as in using and installing a fire sprinkler system or finding the fire (fire alarm) and/or extinguishing it)

- Education (ensuring that building owners and operators have copies and a working understanding of the applicable building and fire codes, having a purpose-designed fire safety plan and ensuring that building occupants,
operators and emergency personnel know the building, its means of Active fire protection and Passive fire protection, its weak spots and strengths to ensure the highest possible level of safety)

**Balanced Approach:**

Passive fire protection (PFP) in the form of compartmentalization was developed prior to the invention of or widespread use of active fire protection (AFP), mainly in the form of automatic fire sprinkler systems. During this time, PFP was the dominant mode of protection provided in facility designs. With the widespread installation of fire sprinklers in the past 50 years, the reliance on PFP as the only approach was reduced. Lobby groups are typically divided into two camps favoring active or passive fire protection. Each camp tries to garner more business for itself through its influence in establishing or changing local and national building and fire codes. At present, the camp favoring AFP appears to be leading, because of the factors mentioned above.

The relatively recent inclusion of *performance based* or *objective based* codes, which have a greater emphasis on life safety than property protection, tend to support AFP initiatives, and can lead to the justification for a lesser degree of fire resistant rated construction. At times it works the other way around, as firewalls that protrude through the roof structure are used to "sub-divide" buildings such that the separated parts are of smaller area and contain smaller fire hazards, and do not necessarily require sprinklers.

The decision to favor AFP versus PFP in the design of a new building may be affected by the lifecycle costs. Lifecycle costs can be shifted from capital to operational budgets and vice versa.

**Building Operation in conformance with Design**

The building is designed in compliance with the local building code and fire code by the architect and other consultants. A building permit is issued after review by the Authority Having Jurisdiction (AHJ).

Deviations from that original plan should be made known to the AHJ to make sure that the change is still in compliance with the law to prevent any unsafe conditions that may violate the law and put people at risk. For example, if the firestop systems in a structure
were inoperable, a significant part of the fire safety plan would not work in the event of a fire because the walls and floors that contain the fire stops are intended to have a fire-resistance rating, which has been achieved through passing a fire test and, often, product certification of the components involved in the construction of those walls and floors. Likewise, if the sprinkler system or fire alarm system is inoperable for lack of knowledgeable maintenance, or if the building occupants prop open a fire door and then run a carpet through, the likelihood of damage and casualties is increased. It is vital for everyone to realize that fire protection within a structure is a system that relies on all of its components.

**Good Housekeeping**

_Good Housekeeping_ is a women's magazine owned by the Hearst Corporation, featuring articles about women's interests, product testing by The Good Housekeeping Institute, recipes, diet, health as well as literary articles. It is well known for the "Good Housekeeping Seal," popularly known as the "Good Housekeeping Seal of Approval."

The magazine achieved a circulation of 300,000 by 1911, at which time it was bought by the Hearst Corporation. It topped one million in the mid-1920s, and continued to rise, even during the Great Depression and its aftermath. In 1938, a year in which the magazine advertising dropped 22 percent, _Good Housekeeping_ showed an operating profit of $2,583,202, more than three times the profit of Hearst's other eight magazines combined, and probably the most profitable monthly of its time. Circulation topped 2,500,00 in 1943, 3,500,00 in the mid-1950s, 5,000,000 in 1962, and 5,500,000 per month in 1966. 1959 profits were more than $11 million.

_Good Housekeeping_ is one of the "Seven Sisters", a group of women's service magazines.

**Good Housekeeping Research Institute:**

In 1900, the "Experiment Station", the predecessor to the Good Housekeeping Research Institute (GHRI), was founded. In 1902, the magazine was calling this "An Inflexible Contract Between the Publisher and Each Subscriber." The formal opening of the headquarters of GHRI - the Model Kitchen, Testing Station for Household Devices, and Domestic Science Laboratory - occurred in January 1910.
In 1909, the magazine established the Good Housekeeping Seal of Approval. Products advertised in the magazine that bear the seal are tested by GHRI and are backed by a two-year limited warranty. About 5,000 products have been given the seal.

In April 1912, a year after Hearst bought the magazine, Harvey W. Wiley, the first commissioner of the U.S. Food and Drug Administration (1907–1912), became head of GHRI and a contributing editor whose "Question Box" feature ran for decades. Beginning with a "Beauty Clinic" in 1932, departments were added to the Institute, including a "Baby's Center," "Foods and Cookery," and a "Needlework Room." Some functioned as testing laboratories, while others were designed to produce editorial copy.

After the passage of the Food, Drug and Cosmetics Act of 1938, Assistant Secretary of Agriculture Rexford Tugwell sought to promote a government grading system. The Hearst Corporation opposed the policy in spirit, and began publishing a monthly tabloid attacking federal oversight. In 1939, the Federal Trade Commission filed a complaint against Good Housekeeping for "misleading and deceptive" guarantees including its Seal of Approval, and "exaggerated and false" claims in its advertisements. The publisher fought the proceedings for two years, during which time competing editors from the Ladies Home Journal and McCall's testified against Good Housekeeping. The FTC's ultimate ruling was against the magazine, forcing it to remove some claims and phraseology from its ad pages. The words "Tested and Approved" were dropped from the Seal of Approval. But the magazine's popularity was unaffected, steadily rising in circulation and profitability. In 1962, the wording of the Seal was changed to a guarantee of "Product or Performance," while dropping its endorsement of rhetorical promises made by the advertisers. In its varying forms, the Seal of Approval became inextricably associated with the magazine, and many others (e.g. McCall's, Parents Magazine and Better Homes and Gardens) mimicked the practice.

Social activism:
The magazine advocated pure food as early as 1905, helping to lead to the 1906 Pure Food and Drug Act. It prohibited the advertising of cigarettes in the magazine in 1952, 12 years before the Surgeon General's warning labels were required on cigarette packs.
During the 1930s, it endorsed the Ludlow Amendment, which sought to require that any declaration of war, except in the event of an invasion, be ratified by a direct vote of the citizenry.
Erstwhile Tariff Rules & Rating

Standard Fire and Special perils Policy shall be issued to cover manufacturing risks, storage risks and miscellaneous blocks rateable under this Tariff.

Scope

This Tariff is applicable
a) for risks using Class A and/or Class B hydrocarbon/natural gas as basic raw materials and
b) where the total sum insured in one compound/complex exceeds Rs. 50 crores and
c) the sum insured of plant(s) using hydrocarbon (Class A/Class B) /natural gas as basic raw materials is in excess of 35% of the total sum insured of the risk.

Note 1: “Urea Synthesis Plant “shall be rated under this Tariff and a basic rate of Rs. 2.75%o shall apply. This rate is subject to warranties given under section 6.

Note 2: Following types of risks are excluded from the scope of this tariff:
(a) Plants whose basic raw materials are not hydrocarbons although the units constituting the plant may be manufacturing Class A/B hydrocarbons or further processing them to make a final product
(b) Bottling plants of LPG and similar materials located outside the refinery premises.

Note 3: Risk(s) which was (were) ratable under erstwhile petrochemical tariff prior to the introduction of revised petrochemical tariff (2001) may continue to be rated under this tariff if the insured so desire, as a onetime option.

1.2 All premises and/or goods ratable under this Tariff are subject to the provisions of All India Fire Tariff unless otherwise specifically provided for.

2. Excess Clause:

This insurance does not cover 5% of the claim amount subject to minimum of Rs. 5 lakhs resulting from each and every loss in Material Damage Insurance for all perils. The excess is applicable per event per insured.
2.1 Definitions

2.1.1 Plant: The physical equipment required to produce a principal product and the related by-products. A plant may consist of one or more number of processing units to achieve the above objective.

2.1.2 Process Unit: Part of the plant that can be logically characterized as a separate entity with identifiable boundaries separated from neighboring areas either by a road or a stretch of land in which there are no other processing equipment (like vessels, reactors, columns, pumps, compressors, etc.) Excepting pipe racks carrying process fluids from one block to another; and consisting of an integrated group of reactors, heaters, furnaces and distillation columns together with their supports and enclosures, if any, and including related appurtenances, compressors, control rooms, pumps, etc., all designed to perform a unified processing operation.

2.1.3 Bulk Tankage/Tank Farms: Tanks or group of tanks for bulk storage of raw or finished products. These shall not include intermediate tanks which are those tied on with the process flow of the plant. In case the intermediate tanks are separated by an adequate distance from the plant as stipulated in this Tariff, they should be treated at par with bulk Tankage.

2.1.4 Utilities or Auxiliaries: Plants such as Boilers, Water Pumps, Cooling Towers, Electric Generating Sets and Substations, Air-conditioning or Refrigeration Units, Air or Inert Gas Compressors, Water Treatment Plants, Effluent Treatment Plants and Air Liquefaction Plants shall be treated as Utilities or Auxiliaries.

Note: Inert gas plants excluding air Liquefaction plant and refrigeration units using flammable hydrocarbons (class A/B) as refrigerants shall be treated as Plants.

2.1.5 Miscellaneous Buildings: Offices, Canteen, Mechanical and Electrical Workshops, Storage, Laboratories, Bagging and Filling Stations, Fire Stations, Change Rooms and open storage.

2.1.6 Flash Point: The minimum temperature at which a flammable liquid gives off flammable vapor as determined by means of Abel/Pensky Martin closed cup method unless otherwise specified.
2.1.7 Classification of Flammable Materials

2.1.7.1 Class `A' Products are those having flash point below and up to 23°C

2.1.7.2 Class `B' products are those having flash point above 23°C and up to 65°C.

2.1.7.3 Class `C' products are those having flash point above 65°C and up to 93°C.

2.1.7.4 Class `D' products are those having flash point above 93°C.

2.1.8 Unstable liquids/ Gases: A liquid or gas may be termed as unstable if it has known characteristics of being readily subjected to rapid chemical change under industrially approved storage or handling practices. Examples are Ethylene Oxide, Acryl nitrite, Acrilene, Hydrogen Cyanide and the like. However, substances which are subject to simple and harmless decomposition or polymerization should not be considered as unstable for the above purpose.

3. Silent Risks

The risk shall be deemed to be `silent' only if all hydrocarbons/flammable materials/combustible materials have been removed and it has been purged (i.e. all apparatus and piping have been thoroughly cleaned) before the inception of the silent period and would continue to be so throughout the silent period. The plant is thus completely empty of hydrocarbons/flammable materials/combustible materials and is completely out of use.

This requirement shall be complied with by all the plants which are linked to one another and which are not separated by a minimum distance specified in this Tariff. The silent period excluding the period required to purge the plant of hydrocarbons/flammable materials/combustible materials and the period of start-up, shall be at least a continuous period of 60 days.

4. Minimum requirements for granting cover

4.1 Unless there are any extenuating circumstances, no insurance cover should be granted to risks falling to be rated under this Tariff unless the following minimum requirements are fulfilled:

4.1.2 Electrical Installation throughout the premises should comply with Committee’s Regulations.

**The Standard Fire & Special Peril Policy**

**I. Fire**

Excluding destruction or damage caused to the property insured by

(i) Its own fermentation, natural heating or spontaneous combustion.

(ii) Its undergoing any heating or drying process.

Burning of property insured by order of any Public Authority.

**II. Lightning**

**III. Explosion/Implosion**

Excluding loss, destruction of or damage

a) To boilers (other than domestic boilers), economizers or other vessels, machinery or apparatus (in which steam is generated) or their contents resulting from their own explosion/implosion, b) caused by centrifugal forces.

**IV. Aircraft Damage**

Loss, Destruction or damage caused by Aircraft, other aerial or space devices and articles dropped there from excluding those caused by pressure waves.

**V. Riot, Strike and Malicious Damage**

Loss of or visible physical damage or destruction by external violent means directly caused to the property insured but excluding those caused by a) total or partial cessation of work or the retardation or interruption or cessation of any process or operations or omissions of any kind.

b) Permanent or temporary dispossession resulting from confiscation, commandeering, requisition or destruction by order of the Government or any lawfully constituted Authority.

c) Permanent or temporary dispossession of any building or plant or unit of machinery resulting from the unlawful occupation by any person of such building or plant or unit or machinery or prevention of access to the same.
d) Burglary, housebreaking, theft, larceny or any such attempt or any omission of any kind of any person (whether or not such act is committed in the course of a disturbance of public peace) in any malicious act. If the Company alleges that the loss/damage is not caused by any malicious act, the burden of proving the contrary shall be upon the insured.

**Terrorism Damage Exclusion Warranty:**

Notwithstanding any provision to the contrary within this insurance it is agreed that this insurance excludes loss, damage cost or expense of whatsoever nature directly or indirectly caused by, resulting from or in connection with any act of terrorism regardless of any other cause or event contributing concurrently or in any other sequence to the loss.

For the purpose of this endorsement an act of terrorism means an act, including but not limited to the use of force or violence and / or the threat thereof, of any person or group(s) of persons whether acting alone or on behalf of or in connection with any organization (s) or government(s), committed for political, religious, ideological or similar purpose including the intention to influence any government and/or to put the public, or any section of the public in fear.

The warranty also excludes loss, damage, cost or expenses of whatsoever nature directly or indirectly caused by, resulting from or in connection with any action taken in controlling, preventing, suppressing or in any way relating to action taken in respect of any act of terrorism.

If the Company alleges that by reason of this exclusion, any loss, damage, cost or expenses is not covered by this insurance the burden of proving the contrary shall be upon the insured. In the event any portion of this endorsement is found to be invalid or unenforceable, the remainder shall remain in full force and effect.

VI. Storm, Cyclone, Typhoon, Tempest, Hurricane, Tornado, Flood and Inundation

Loss, destruction or damage directly caused by Storm, Cyclone, Typhoon, Tempest, Hurricane, Tornado, Flood or Inundation excluding those resulting from earthquake, Volcanic eruption or other convulsions of nature. (Wherever earthquake cover is given as an “add on cover” the words “excluding those resulting from earthquake volcanic eruption or other convulsions of nature” shall stand deleted).
VII. Impact Damage
Loss of or visible physical damage or destruction caused to the property insured due to impact by any Rail/ Road vehicle or animal by direct contact not belonging to or owned by a) the Insured or any occupier of the premises or b) their employees while acting in the course of their employment.

VIII. Subsidence and Landslide including Rock slide
Loss, destruction or damage directly caused by Subsidence of part of the site on which the property stands or Landslide/Rock slide excluding:
   a) The normal cracking, settlement or bedding down of new structures
   b) The settlement or movement of made up ground
   c) Coastal or river erosion
   d) Defective design or workmanship or use of defective materials
   e) Demolition, construction, structural alterations or repair of any property or groundwork or excavations.

IX. Bursting and/or overflowing of Water Tanks, Apparatus and Pipes
IX. Missile Testing operations
X. Leakage from Automatic Sprinkler Installations Excluding loss, destruction or damage caused by
   a) Repairs or alterations to the buildings or premises
   b) Repairs, Removal or Extension of the Sprinkler Installation
   c) Defects in construction known to the Insured.

XII. Bush Fire Excluding loss, destruction or damage caused by Forest Fire.

PROVIDED that the liability of the Company shall in no case exceed in respect of each item the sum expressed in the said Schedule to be insured thereon or in the whole the total Sum Insured hereby or such other sum or sums as may be substituted therefore by memorandum hereon or attached hereto signed by or on behalf of the Company.

(A) GENERAL EXCLUSIONS
1. This Policy does not cover (not applicable to policies covering dwellings)
   a) The first 5% of each and every claim subject to a minimum of Rs.10,000 in respect of each and every loss arising out of “Act of God perils” such as Lightning, STFI, Subsidence, Landslide and Rock slide covered under the policy
b) The first Rs.10,000 for each and every loss arising out of other perils in respect of which the Insured is indemnified by this policy

The Excess shall apply per event per insured.

2. Loss, destruction or damage caused by war, invasion, act of foreign enemy hostilities or war like operations (whether war be declared or not), civil war, mutiny, civil commotion assuming the proportions of or amounting to a popular rising, military rising, rebellion, revolution, insurrection or military or usurped power.

3. Loss, destruction or damage directly or indirectly caused to the property insured by a) ionizing radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel

b) The radioactive toxic, explosives or other hazardous properties of any explosive nuclear assembly or nuclear component thereof

4. Loss, destruction or damage caused to the insured property by pollution or contamination excluding

a) Pollution or contamination which itself results from a peril hereby insured against.

b) Any peril hereby insured against which itself results from pollution or contamination

5. Loss, destruction or damage to bullion or unset precious stones, any curios or works of art for an amount exceeding Rs. 10000/-, goods held in trust or on commission, manuscripts, plans, drawings, securities, obligations or documents of any kind, stamps, coins or paper money, cheques, books of accounts or other business books, computer systems records, explosives unless otherwise expressly stated in the policy.

6. Loss, destruction or damage to the stocks in Cold Storage premises caused by change of temperature.

7. Loss, destruction or damage to any electrical machine, apparatus, fixture, or fitting arising from or occasioned by over-running, excessive pressure, short circuiting, arcing, self heating or leakage of electricity from whatever cause (lightning included) provided that this exclusion shall apply only to the particular electrical machine, apparatus, fixture or fitting so affected and not to other machines, apparatus, fixtures or fittings which may be destroyed or damaged by fire so set up.

8. Expenses necessarily incurred on

(i) Architects, Surveyors and Consulting Engineer's Fees and
(ii) Debris Removal by the Insured following a loss, destruction or damage to the Property insured by an insured peril in excess of 3% and 1% of the claim amount respectively.

9. Loss of earnings, loss by delay, loss of market or other consequential or indirect loss or damage of any kind or description whatsoever.

10. Loss, or damage by spoilage resulting from the retardation or interruption or cessation of any process or operation caused by operation of any of the perils covered.

11. Loss by theft during or after the occurrence of any insured peril except as provided under Riot, Strike, Malicious and Terrorism Damage cover.

12. Any Loss or damage occasioned by or through or in consequence directly or indirectly due to earthquake, volcanic eruption or other convulsions of nature.

13. Loss or damage to property insured if removed to any building or place other than in which it is herein stated to be insured, except machinery and equipment temporarily removed for repairs, cleaning, renovation or other similar purposes for a period not exceeding 60 days.

(B) GENERAL CONDITIONS

1. THIS POLICY shall be voidable in the event of mis-representation, mis-description or non-disclosure of any material particular.

2. All insurances under this policy shall cease on expiry of seven days from the date of fall or displacement of any building or part thereof or of the whole or any part of any range of buildings or of any structure of which such building forms part.

Provided such a fall or displacement is not caused by insured perils, loss or damage which is covered by this policy or would be covered if such building, range of buildings or structure were insured under this policy.

Notwithstanding the above, the Company subject to an express notice being given as soon as possible but not later than seven days of any such fall or displacement may agree to continue the insurance subject to revised rates, terms and conditions as may be decided by it and confirmed in writing to this effect.
3. Under any of the following circumstances the insurance ceases to attach as regards the property affected unless the Insured, before the occurrence of any loss or damage, obtains the sanction of the Company signified by endorsement upon the policy by or on behalf of the Company:

a. If the trade or manufacture carried on be altered, or if the nature of the occupation of or other circumstances affecting the building insured or containing the insured property be changed in such a way as to increase the risk of loss or damage by Insured Perils.

b. If the building insured or containing the insured property becomes unoccupied and so remains for a period of more than 30 days. (not applicable for dwellings)

c. If the interest in the property passes from the insured otherwise than by will or operation of law.

4. This insurance does not cover any loss or damage to property which, at the time of the happening of such loss or damage, is insured by or would, but for the existence of this policy, be insured by any marine policy or policies except in respect of any excess beyond the amount which would have been payable under the marine policy or policies had this insurance not been effected.

5. This insurance may be terminated at any time at the request of the Insured, in which case the Company will retain the premium at customary short period rate for the time the policy has been in force. This insurance may also at any time be terminated at the option of the Company, on 15 days' notice to that effect being given to the Insured, in which case the Company shall be liable to repay on demand a ratable proportion of the premium for the unexpired term from the date of the cancellation.

6. (i) On the happening of any loss or damage the Insured shall forthwith give notice thereof to the Company and shall within 15 days after the loss or damage, or such further time as the Company may in writing allow in that behalf, deliver to the Company:

a. A claim in writing for the loss or damage containing as particular an account as may be reasonably practicable of all the several articles or items or property damaged or destroyed, and of the amount of the loss or damage thereto respectively, having regard to their value at the time of the loss or damage not including profit of any kind.

b. Particulars of all other insurances, if any. The Insured shall also at all times at his own expense produce, procure and give to the Company all such further particulars, plans,
specification books, vouchers, invoices, duplicates or copies thereof, documents, investigation reports (internal/external), proofs and information with respect to the claim and the origin and cause of the loss and the circumstances under which the loss or damage occurred, and any matter touching the liability or the amount of the liability of the Company as may be reasonably required by or on behalf of the Company together with a declaration on oath or in other legal form of the truth of the claim and of any matters connected therewith.

No claim under this policy shall be payable unless the terms of this condition have been complied with (ii) In no case whatsoever shall the Company be liable for any loss or damage after the expiry of 12 months from the happening of the loss or damage unless the claim is the subject of pending action or arbitration; it being expressly agreed and declared that if the Company shall disclaim liability for any claim hereunder and such claim shall not within 12 calendar months from the date of the disclaimer have been made the subject matter of a suit in a court of law then the claim shall for all purposes be deemed to have been abandoned and shall not thereafter be recoverable hereunder.

7. On the happening of loss or damage to any of the property insured by this policy, the Company may a. enter and take and keep possession of the building or premises where the loss or damage has happened. Take possession of or require to be delivered to it any property of the Insured in the building or on the premises at the time of the loss or damage. Keep possession of any such property and examine, sort, arrange, remove or otherwise deal with the same. Sell any such property or dispose of the same for account of whom it may Concern.

The powers conferred by this condition shall be exercisable by the Company at any time until notice in writing is given by the insured that he makes no claim under the policy, or if any claim is made, until such claim is finally determined or withdrawn, and the Company shall not by any act done in the exercise or purported exercise of its powers hereunder, incur any liability to the Insured or diminish its rights to rely upon any of the Conditions of this policy in answer to any claim. If the insured or any person on his behalf shall not comply with the requirements of the Company or shall hinder or obstruct the Company, in the exercise of its powers hereunder, all benefits under this policy shall
be forfeited. The Insured shall not in any case be entitled to abandon any property to the Company whether taken possession of

8. If the claim be in any respect fraudulent, or if any false declaration be made or used in support thereof or if any fraudulent means or devices are used by the Insured or any one acting on his behalf to obtain any benefit under the policy or if the loss or damage be occasioned by the willful act, or with the connivance of the Insured, all benefits under this policy shall be forfeited.

9. If the Company at its option, reinstate or replace the property damaged or destroyed, or any part thereof, instead of paying the amount of the loss or damage, or join with any other Company or Insurer(s) in so doing, the Company shall not be bound to reinstate exactly or completely but only as circumstances permit and in reasonably sufficient manner, and in no case shall the Company be bound to expend more in reinstatement than it would have cost to reinstate such property as it was at the time of the occurrence of such loss or damage nor more than the sum insured by the Company thereon. If the Company so elect to reinstate or replace any property the insured shall at his own expense furnish the Company with such plans, specifications, measurements, quantities and such other particulars as the Company may require, and no acts done, or caused to be done, by the Company with a view to reinstatement or replacement shall be deemed an election by the Company to reinstate or replace.

If in any case the Company shall be unable to reinstate or repair the property hereby insured, because of any municipal or other regulations in force affecting the alignment of streets or the construction of buildings or otherwise, the Company shall, in every such case, only be liable to pay such sum as would be requisite to reinstate or repair such property if the same could lawfully be reinstated to its former condition.

10. If the property hereby insured shall at the breaking out of any fire or at the commencement of any destruction of or damage to the property by any other peril hereby insured against be collectively of greater value than the sum insured thereon, then the Insured shall be considered as being his own insurer for the difference and shall bear a ratable proportion of the loss accordingly. Every item, if more than one, of the policy shall be separately subject to this condition.
11. If at the time of any loss or damage happening to any property hereby insured there
be any other subsisting insurance or insurances, whether effected by the Insured or by
any other person or persons covering the same property, this Company shall not be liable
to pay or contribute more than its rate able proportion of such loss or damage.

12. The Insured shall at the expense of the Company do and concur in doing, and permit
to be done, all such acts and things as may be necessary or reasonably required by the
Company for the purpose of enforcing any rights and remedies or of obtaining relief or
indemnity from other parties to which the Company shall be or would become entitled or
subrogated, upon its paying for or making good any loss or damage under this policy,
whether such acts and things shall be or become necessary or required before or after his
Indemnification by the Company.

13. If any dispute or difference shall arise as to the quantum to be paid under this policy
(liability being otherwise admitted) such difference shall independently of all other
questions be referred to the decision of a sole arbitrator to be appointed in writing by the
parties to or if they cannot agree upon a single arbitrator within 30 days of any party
invoking arbitration, the same shall be referred to a panel of three arbitrators, comprising
of two arbitrators, one to be appointed by each of the parties to the dispute/difference and
the third arbitrator to be appointed by such two arbitrators and arbitration shall be
conducted under and in accordance with the provisions of the Arbitration and
Conciliation Act, 1996. It is clearly agreed and understood that no difference or dispute
shall be preferable to arbitration as hereinbefore provided, if the Company has disputed
or not accepted liability under or in respect of this policy.

It is hereby expressly stipulated and declared that it shall be a condition precedent to any
right of action or suit upon this policy that the award by such arbitrator/ arbitrators of the
amount of the loss or damage shall be first obtained.

14. Every notice and other communication to the Company required by these conditions
must be written or printed.

15. At all times during the period of insurance of this policy the insurance cover will be
maintained to the full extent of the respective sum insured in consideration of which upon
the settlement of any loss under this policy, pro-rata premium for the unexpired period
from the date of such loss to the expiry of period of insurance for the amount of such loss
shall be payable by the insured to the Company. The additional premium referred above shall be deducted from the net claim amount payable under the policy. This continuous cover to the full extent will be available notwithstanding any previous loss for which the company may have paid hereunder and irrespective of the fact whether the additional premium as mentioned above has been actually paid or not following such loss. The intention of this condition is to ensure continuity of the cover to the insured subject only to the right of the company for deduction from the claim amount, when settled, of pro-rata premium to be calculated from the date of loss till expiry of the policy. Notwithstanding what is stated above, the Sum Insured shall stand reduced by the amount of loss in case the insured immediately on occurrence of the loss exercises his option not to reinstate the sum insured as above.

**Partial Insurance**

- Partial insurance can refer to any type of insurance that omits certain risks or only covers costs in specific circumstances. In more common use, partial insurance refers to incomplete health insurance coverage. Partial insurance in the field of health leaves patients unable to file claims for certain types of care despite having coverage in other areas. Health care analysts and professionals discuss partial insurance along with the uninsured when advocating health insurance policy changes.

**Reasons**

- Patients may have partial insurance for one of two reasons. The first reason is cost, as when a given patient can only afford partial insurance, or was uninsured and qualifies for subsidized or free insurance that only offers partial coverage. The other reason for partial insurance is because a patient chooses to fracture risk with more than one insurance policy. Each policy offers partial coverage, but together they provide more comprehensive coverage. For example, in a country with a national health plan, a resident may choose to purchase private partial health insurance to add coverage in one or more areas where public health insurance is lacking.
Impact

- Partial insurance has a number of effects throughout the health care field. For patients, it makes certain types of care, or venues for care, more affordable than others. For example, patients who don't have standard health insurance policies can still seek care in emergency rooms, where government and health care provider subsidies may cover the cost of care, creating a form of de facto partial insurance. This means fewer uninsured patients have reasons to seek insurance or see doctors regularly, leading to emergency room overcrowding and late treatment for medical conditions.

Policy Issues

- Health care policymakers need to consider the impact of partial insurance. Hospitals and doctors' offices make treatment decisions based in part on what types of insurance patients have, which can conflict with the best medical practices. Federal health care reform legislation from 2010, which goes into full effect in 2014, seeks to address partial insurance by making comprehensive policies mandatory and more affordable.

Buying partial coverage insurance is optional (as opposed to liability insurance). This insurance covers damage to your own car, including the following risks, which may be combined in various ways, depending on the insurance company:

- Theft: theft of vehicle, including coverage for damage to the vehicle due to attempted theft. Your risk depends on where you usually park your vehicle (e.g. in a garage, private or public parking spot).
- Damage due to natural forces: damage to the vehicle caused by forces of nature such as stormy winds, avalanches, hailstorms, landslides, rock fall, high water, floods and snow load.
- Fire: damage to your own vehicle caused by fire, lightning, explosions and short-circuiting.
- Glass (breakage): damage to windows, sometimes other parts made out of glass or a glass-like substitute.
- Road kill: coverage includes damage to your vehicle caused by hitting an animal, e.g. a deer.
- Acts of vandalism: if someone intentionally breaks off your vehicle's aerial, windscreen wipers or wing mirrors, punctures your tyres or pollutes the contents of the tank, the insurance will cover the costs of repair.
- Marten: coverage includes damage to the vehicle caused by marten.
- Personal belongings: coverage includes stolen or damaged luggage that needs to be repaired or replaced in case of an insured damage event, but not valuables.

The combination of partial coverage and collision insurance is often called comprehensive insurance.

**Cancellation of Policies**

An insurance policy may be canceled before the end of the policy period. This has the effect of ending the policy coverage on the date of the policy cancellation.

**Cancellation Methods:**

Three different calculation methods are commonly used. Cancellation methods are typically calculated using an online wheel calculator.

**Pro Rata**

A non-penalty method of calculating the return premium of a canceled policy. A return premium factor is calculated by taking the number of days remaining in the policy period divided by the number of total days of the policy. This factor is multiplied by the written premium to arrive with the return premium.

**Short Rate (Old Short Rate)**

A penalty method of calculating the return premium often used when the policy is canceled at the insured’s request. It uses a table of factors that results in penalties that can be lower or higher than *short rate (90% pro rata)* depending upon the date of cancellation.

**Short Rate (90% Pro Rata)**

A penalty method that where the penalty is 10% of the unearned premium.
Cancellation Details:

The date policy's coverage is cancelled prior to the normally expiration date of a policy, often resulting in a return premium owed to the insured.

Policy term:

The period of time that an insurance policy provides coverage. Most policies have an one year term (365 days) but many other polices also have a 6 month term. Policy terms can be for any length of time and can be for a short period when the period of risk is also short. Policy terms can also be for a multi year period.

Return Premium

When a policy is canceled before its expiration date a return premium may be owed to the insured. The return premium is generally calculated using a wheel calculator. The return premium is calculated by calculating the unearned premium and then subtracting any unpaid premium and penalty for early cancellation. Short rate (old short rate) and short rate (90% pro rata) are penalty methods of calculating the return premium.

Earned Premium:

Earned premium is the portion of an insurance written premium which is considered "earned" by the insurer, based on the part of the policy period that the insurance has been in effect, and during which the insurer has been exposed to loss. For instance, if a 365-day policy with a full premium payment at the beginning of the term has been in effect for 120 days, 120/365 of the premium is considered earned. Earned premium will not be returned to the insured if the policy is cancelled.

Unearned premium:

Unearned premium is the portion for an insurance written premium which is considered "unearned" by the insurer. It is the written premium less the earned premium. The unearned premium would be returned to the insured if the policy is canceled using pro rata cancellation method, when the policy is cancelled with no penalty.
Cancellation cover

Cancellation cover applies if you have booked a trip to take place within the policy period, but you are forced to cancel your travel plans because of one of changes in circumstances, which are beyond your control, and of which you were unaware at the time you booked the trip.

Cancellation cover may vary but some typical examples are listed below.

- Unforeseen illness, injury or death of you, a close relative or any person with whom you have arranged to travel or stay during the trip.
- You abandoning your trip following a delay of more than 12 hours in the departure of your outward flight, sea-crossing or international coach or train journey, forming part of the booked trip’s itinerary, as a result of strike or industrial action (of which you were unaware at the time you booked the trip), adverse weather conditions, or the mechanical breakdown of, or accident of, the aircraft, sea vessel, coach or train.
- You or any person with whom you plan to travel being called up for jury service or being subpoenaed as a witness in a Court of Law (other than in a professional or advisory capacity). If you are made redundant and you qualify for redundancy payment under current legislation. Accidental damage, burglary, flooding or fire affecting your Home, occurring during the trip or within 48 hours before you depart, when a loss relating to your home in excess of a specific monetary amount is involved and your presence is required by the Police in connection with such events.

Industrial & Manufacturing Risks

Manufacturing - Manufacturing Industry Risks

MEMIC data analysis indicates the following are areas of concern in manufacturing. The following list of problems with recommended solutions that — if put into practice — can help make your place of business safer.

1. Material handling

Workers in manufacturing must continually move raw, in-process, or finished goods in the routine course of producing marketable commodities. Equipment, too, must often be
moved and maintained. Improper handling of these materials and tasks can cause overexertion, repetitive motions, strains/sprains, all of which can cause injuries. These risks can be controlled by:

- Require the use and maintenance of lift-aid equipment such as hoists, cranes, forklifts and come-along (rather than manually lifting) whenever possible.
- When materials must be lifted by hand, require workers to employ proper lifting techniques. For example, workers should avoid lifting from the floor level, and avoid extended reaching. Workers should get help to avoid heavy lifting by themselves.
- Implement a stretching program.

2. Personal protective equipment

A leading reason for injuries in manufacturing environments is the lack or improper use of personal protective equipment. Employers should provide the appropriate personal protective equipment along with training on its proper use. Manufacturing environments should require:

- Eye/face protection including goggles, shields, welding lenses and curtains.
- Other safety apparel including safety shoes, gloves, and clothing.

3. Housekeeping

Falls are another leading cause of injury to workers in manufacturing. Most slips, trips and falls can be traced to poor housekeeping practices. Here are some simple ways to prevent these injuries:

- Falls are another leading cause of injury to workers in manufacturing. Most slips, trips and falls can be traced to poor housekeeping practices. Here are some simple ways to prevent these injuries:
- Keep floors and work areas clear of debris, electrical cords, tools and other extraneous equipment. Make sure floors are not slippery.
- Remove ice and snow as often as practical, and use sand and/or salt on slippery walking surfaces.
4. Safeguarding and lockout/tagout

Injuries that are caused by workers who come in contact with machines are closely correlated with the lack of appropriate safeguards on the machines. Without proper guards, workers can suffer serious injuries to their extremities or, can be pulled by their hair or by loose-fitting clothing into a machine. In addition, injuries occur when maintenance is performed without disabling power to machines. To protect against these types of injuries:

- Prevent worker contact with all rotating or moving machinery by using guards, enclosures, or guarding devices between the worker and the machine.
- Implement a lockout/tagout procedure. This will ensure that power to equipment is completely disconnected and cannot be reconnected while someone is working on the equipment.

5. Effective supervision

Well-trained supervisors will manage well-planned jobs and will ultimately produce safe and productive working environments. Research shows that many supervisors are promoted because of their technical ability or their productivity; This does not mean that he or she is ready for the human relations challenges of creating safe and productive environments. Employers should:

- Provide supervisor training. Train your supervisors in human relations skills, behavior-based management and their responsibility toward safe production. MEMIC can help through our supervisory management training programs.
- Make accountability to work safely a part of the job. Just as productivity is a valued when supervisors are reviewed, so should safe work environments. Make safety a part of every supervisor’s job appraisal.
- Establish a written commitment from management to workplace safety.
- Select a medical provider to assist in getting injured employees back to work.

Develop employee involvement through safety committees or regular safety meetings.
• Require a new employee orientation to job safety requirements.
• Employee selection process should include a job application, a reference check, and an in-depth interview, as well as a pre-placement interview.

Storage Risk:
Results from a comparison study of four international large group workshops designed to inform stakeholders about CCS and other climate issues (held in Australia, the UK, Canada, and the Netherlands), found that participants’ perceptions of CCS tended to focus on the perceived risks and uncertainties associated with the technology. Workshop participants in each country raised questions around CCS safety, the likelihood of unplanned leaks of CO₂, and the likelihood of CO₂ remaining safely stored for long periods of time, but other areas of questioning spanned a host of wider economic and social concerns (Ashworth et al. 2012). The 2012 project survey results echo these findings. The survey asked projects for feedback on their most frequently raised stakeholder concerns. The health, safety, and environmental impacts of onshore CO₂ storage topped the project survey list, closely followed by health, safety, and environmental concerns regarding onshore transportation of CO₂. The next most reported concerns were around the cost/benefit of CCS and potential impacts to community property values.

These findings undoubtedly point to the need for those trying to communicate the benefits of CCS to be able to provide accurate information on key technical topics such as the properties of CO₂, CO₂-behaviour underground, and CO₂ behavior in its different phases of transportation. However, social research and emerging project experience indicates that allaying public concerns around future CCS demonstration projects involves much more than a simple provision of facts, or a beautifully crafted scientific argument. It is not simply about what is communicated, but how it is communicated.

To help with the delivery of technical project information, a number of recent CCS demonstration projects such as ROAD, Gerick CCS, Compostable and Longannet have reported great success in providing communications training for their project’s technical staff.
"We have found that just providing a basic level of communication training to the technical staff on our project greatly improved their confidence and ability to interact with a wider array of stakeholders. We have worked hard to make sure that our project staff can hold dialogs and present in a balanced way – explaining both the benefits and potential risks of CCS technology, using language their audience can understand! Having technical staff able to present in public has brought real credibility to our outreach and education work. “

**Gloria Popescu, Head of Knowledge Sharing and Communication at the Romanian Institute for Studies and Power Engineering (ISPE), Getica CCS, Romania.**

Multiple sources of risk research (on CCS but also on more established topics such as nuclear power and genetically modified crops) confirm that the ‘general public’ assesses risk based on a range of factors, not just probabilistic assessments or empirical facts (Bradbury et al. 2011). This more expansive approach to risk assessment becomes particularly evident in the case of evolving technologies like CCS that are still in the demonstration and learning phase of development. Risk communication in this kind of uncertain environment relies very heavily on establishing trust between the communicator and stakeholder.

CSIRO’s comparison of five international CCS projects (Ashworth et al. 2010a) found that the projects that were framed as research projects and were aligned to research organizations were more readily accepted than those initiated or fronted by a private company. Projects led by private companies that have been well received – despite not being aligned to specific research projects – tend to have either framed their project as part of a responsible approach to business as usual (CO₂ EOR projects in North America), or they have gone to great lengths to demonstrate the knowledge-sharing public good components of the project.
**Documents**

With more and more people opting for a luxurious lifestyle, as a result becoming gadget freaks, the risk of facing a crisis situation i.e. fire accidents have increased considerably. In such circumstances, the best bet would be to get your house and commodities secured and insured. One such policy is the home fire insurance policy, also called Standard Fire and Special Perils Policy, the bulwark against such potential perils. It offers protection against the risk of loss or damage due to fire or special perils. The policy pays for the actual cost of repairs, replacement or setting up of the item lost or damaged. However, claim settlements are subject to the market value of the property damaged, at the time of loss, upon an overall limit of the sum insured opted. If the individual value of assets is not furnished, the value of each property is considered as not more than 5% of the total sum insured. Know more about the types of fire insurance policy, the documents required and what is covered in these policies.

**Types of Fire Insurance Policy**

**Specific Policy**

In this type of policy, the insurance company is liable to pay a sum, which may be less than the property's real value. The insured is called to bear a part of the loss, as the actual value of the property is not considered in deciding the amount of indemnity. This is a case of under-insurance of property.

**Comprehensive Policy**

Known as "all-in-one" policy, the insurance company indemnifies the policyholder for loss arising out of fire, burglary, and theft and third party risks. In this type of policy, the policyholder also gets paid for loss of profits incurred, due to fire, till the time the business remains shut.

**Valued Policy**

In this type of policy, the value of the commodity is already set and actual loss is not taken into consideration. The policy follows a standard contract of indemnity, wherein the policyholder gets paid a specific amount of indemnity, without considering the actual loss.
Floating Policy
This type of policy is subject to average clause and the extent of coverage expands to different properties, belonging to the policyholder, under the same contract and one premium. The floating policy also provides protection of goods kept at two different stores.

Replacement or Re-instatement Policy
As per replacement or re-instatement policy, the insurance company instead of paying the policyholder the amount of indemnity in cash, replaces the damaged property/commodity with a new one.

Documents Required for Fire Insurance Claim

- True copy of the policy along with schedule.
- Report of fire brigade.
- Claim Form
- Photographs
- Past claims experience

What is covered in Fire & Special Perils Policy?

- Accidental fires, lightning, explosion and implosion due to pressure vessels (used for domestic purposes)
- By rioting mob, striking workers, malicious acts by third parties and damage by terrorists
- Impact damage by any rail/road vehicle or animal by direct contact.
- Commodities damaged by water used for extinguishing fire.
- Loss/damage caused by pulling down of adjacent buildings by the fire brigade to prevent the flames from progressing.
- Breakage of commodities in the process of their removal from the premises where fire is intense.
- Aircraft and other aerial and and/or space devices and/or articles dropped there from, excluding destruction or damage occasioned by pressure waves caused by such devices
- Payments made to people employed in extinguishing fire.
- Subsidence and landslide, including rock slide.
- Natural calamities like storm, cyclone, typhoon, hurricane, tornado, flood and impact damage.
- Damages caused due to bursting or overflowing of water tanks, apparatus and pipes
- Bush Fire

**Information through Proposal Form**

In The Event of a loss, the insured is expected to do the following:

- To intimate to the insurer about the loss immediately, submit full statement in writing of the claim providing the nature and extent of loss and also the estimate of loss. Please note that if the insured fails to intimate the claim within 14 days then insurer will not be liable for any liability of the loss / damage.
- To take all steps to reduce and minimize the extent of loss / damage and liability.
- To extend full co-operation to the insurer and the surveyor appointed for completion of the survey work and for proper assessment of the loss.
- Produce all such record and proof as may be required by the surveyor or the insurer for arriving at the extent of loss and the liability under policy.
- Keep the damaged property under the safe custody until advised by the surveyor / insurer regarding its disposal.
- Inform fire brigade as also policy immediately and obtain their reports.
- Obtain fire brigade bill as fire fighting expenses are reimbursable as part of claim.
- Obtain meteorological report if required in case of natural calamities.
- Aspects taken into consideration during loss assessment by surveyor Identification of the subject matter insured.
- Proximate cause of the loss and whether it is within the scope of the policy.
- Any breach of warranty / condition, and if so, whether the breach is material to the loss or not material to the loss.
- Extent of the loss.
- Salvage.
- Valuation.
- Documents required for settlement of a claim under the fire policy.
- Copy of the policy.
- Survey report.
- Claim form duly completed by the insured.
- Police report (for riot claims) / Panchanama (fire loss).
- Fire brigade report.
- Meteorological report (in case of flood, cyclone etc. claims).
- Photographs.
- Detailed claim bill with necessary bills / voucher.
- Copy of enquiry committee report on cause of loss if enquiry is ordered by insured.

**ASSESSMENT BY SURVEYOR**

Aspects taken into consideration during loss assessment by surveyor

Identification of the subject matter insured.

- Proximate cause of the loss and whether it is within the scope of the policy.
- Any breach of warranty / condition, and if so, whether the breach is material to the loss or not material to the loss.
- Extent of the loss.
- Salvage.
- Valuation.

**DOCUMENTS REQUIRED**

- Copy of the policy.
- Survey report.
**Risk Inspection Report**

A report, by an insurer or one of a number of inspection services available, assessing the moral, financial, and physical aspect of a risk.

Policies are tailored by selection from or addition to the above list depending upon the nature of the risk and the type of insurance protection required by a client.

**Principal Exclusions**

The Fire insurance policy would have certain specific exclusions including

- War & related perils
- Nuclear perils
- Sabotage & Terrorism
- Fire due to own fermentation / spontaneous combustion
- Pollution & Contamination (unless caused by an insured peril)

**Material Information that should be disclosed**

As already mentioned all information that would have an impact on the acceptability of the risk and the terms at which it would be accepted, need to be provided. These would include:

- Narration of how the premises are occupied and what processes are carried on in the premises.
- If there is any hazardous / flammable materials stored / used OR if there is any hazardous process carried on in the premises it should be specified in the proposal form.
- Information on past losses (if any). If there had been no losses in the past then this information also should be provided. It should be remembered that this information relates to whether there had been any past losses and the information should include loss experiences even if no insurance claim was lodged.
Information about whether any Insurer had refused to provide insurance for the risk or whether any Insurer had placed any restriction at any time on the insurance for the risk

**Risk Report:**

Fire Safety law underwent a significant change on 1st October 2006, when more than 100 separate pieces of legislation were repealed, and replaced with a single new set of regulations, the Regulatory Reform (Fire Safety) Order 2005. This is often referred to simply as „The Fire Safety Order” . The new fire safety law applies to all workplaces in England and Wales, and similar legislation covers Scotland and Northern Ireland.

The primary responsibilities under the regulations relate to the identification of fire hazards and provision of necessary and adequate control measures. The emphasis has changed from providing safe escape once a fire has broken out to preventing a fire starting in the first place. It is the responsibility of the person(s) having control of the premises to ensure that a Fire Risk Assessment is carried out, which is explained in more detail in RMG 52 (also available from RSA Group). The system of self-inspection detailed below is not a substitute for the formal Fire Risk Assessment, but is designed to support the formal FRA process, and to involve all levels of staff in maintaining fire safety.

All directors and employees depend on the continued well being of their company for their livelihood. A serious fire can easily disrupt production and put them out of business. Major fires can be started by arsonists, misuse of electrical equipment, smoking materials, mechanical heat and sparks, heating plant, rubbish burning or other causes. The spread of fire throughout the premises may be assisted by waste, electrical insulation, packaging materials, stock or flammable liquids. As part of management’s responsibilities to reduce fire risks a system of self inspection can be introduced involving the use of an “Internal Fire Inspection Report”. Whilst formal inspections are a very valuable tool in reducing fire risks, they are not intended to be a substitute for day to day observation. Internal Fire Inspection Report A self inspection system should help to identify problems which could, if left unattended, lead to a serious loss. Involving employees in an inspection system may help to ensure that they become aware of fire
hazards and develop a self discipline to produce a working environment where the threat of fire is greatly reduced.

The attached “Internal Fire Inspection Report” illustrates the type of document required for a self inspection system. The list is not exhaustive and you may find some of the items unnecessary, especially if they form part of another inspection programmed. One overall report for the whole premises will often suffice for smaller businesses. In larger companies the best results are likely to be obtained if each department is made responsible for carrying out its own audit. For certain specific areas or departments you may find that it would be more advantageous to design the fire inspection report to cater for this area/department alone.

**Inspection Frequency**

Frequency of inspection will be dependent on many variables including changes in occupation, building alterations, staff turnover and the number of items requiring action found in previous reports. Where regular safety audits are already being carried out the fire inspection could be carried out at the same time, however it must be stressed that the objectives of a fire audit are to reduce the risk of fire destroying the business and assets of the company. Employees will however benefit from having a working environment where the risk of fire has been reduced. Depending on such factors the inspections could be carried out on a weekly, monthly or quarterly basis.

**Implementation**

An essential part of the audit is to ensure that there is a response to adverse points raised, otherwise those responsible for undertaking the inspections will feel that the system is not justified and it will fall into disrepute. A system should therefore be devised involving the various line managers and the company Fire/Health Officer to ensure that the audit reports are logged and the items requiring further attention auctioned. As part of this process those who undertake the inspections should be kept informed of the remedial actions being taken. To maintain an interest in fire inspections responsibility for completion of the report should be delegated by the departmental manager to an appropriately trained member of his workforce. Line management and/or the company Fire and Health and Safety Officer should occasionally be present during an inspection.
Underwriting

Underwriting refers to the process that a large financial service provider (bank, insurer, investment house) uses to assess the eligibility of a customer to receive their products (equity capital, insurance, mortgage, or credit). The name derives from the Lloyd's of London insurance market. Financial bankers, who would accept some of the risk on a given venture (historically a sea voyage with associated risks of shipwreck) in exchange for a premium, would literally write their names under the risk information that was written on a Lloyd's slip created for this purpose.

Securities underwriting

Securities underwriting refers to the process by which investment banks raise investment capital from investors on behalf of corporations and governments that are issuing securities (both equity and debt capital). The services of an underwriter are typically used during a public offering.

This is a way of a newly issued security, such as stocks or bonds, to investors. A syndicate of banks (the lead managers) underwrites the transaction, which means they have taken on the risk of distributing the securities. Should they not be able to find enough investors, they will have to hold some securities themselves. Underwriters make their income from the price difference (the "underwriting spread") between the price they pay the issuer and what they collect from investors or from broker-dealers who buy portions of the offering.

Risk, exclusivity, and reward

Once the underwriting agreement is struck, the underwriter bears the risk of being unable to sell the underlying securities, and the cost of holding them on its books until such time in the future that they may be favorably sold.

If the instrument is desirable, the underwriter and the securities issuer may choose to enter into an exclusivity agreement. In exchange for a higher price paid upfront to the issuer, or other favorable terms, the issuer may agree to make the underwriter the exclusive agent for the initial sale of the securities instrument. That is, even though third-
party buyers might approach the issuer directly to buy, the issuer agrees to sell exclusively through the underwriter.

In summary, the securities issuer gets cash up front, access to the contacts and sales channels of the underwriter, and is insulated from the market risk of being unable to sell the securities at a good price. The underwriter gets a nice profit from the markup, plus possibly an exclusive sales agreement.

Also, if the securities are priced significantly below market price (as is often the custom), the underwriter also curries favor with powerful end customers by granting them an immediate profit (see flipping), perhaps in a quid pro quo. This practice, which is typically justified as the reward for the underwriter for taking on the market risk, is occasionally criticized as unethical, such as the allegations that Frank Quattrone acted improperly in doling out hot IPO stock during the dot com bubble.

**Bank Underwriting:**

In banking, underwriting is the detailed credit analysis preceding the granting of a loan, based on credit information furnished by the borrower; such underwriting falls into several areas: (a) Consumer loan underwriting includes the verification of such items as employment history, salary and financial statements; publicly available information, such as the borrower's credit history, which is detailed in a credit report; and the lender's evaluation of the borrower's credit needs and ability to pay. Examples include mortgage underwriting. (b) Commercial (or business) underwriting consists of the evaluation of financial information provided by small businesses including analysis of the business balance sheet including tangible net worth, the ratio of debt to worth (leverage) and available liquidity (current ratio). Analysis of the income statement typically includes revenue trends; gross margin, profitability, and debt service coverage (see Debt Service Coverage Ratio).

Underwriting can also refer to the purchase of corporate bonds, commercial paper, government securities, municipal general-obligation bonds by a commercial bank or dealer bank for its own account or for resale to investors. Bank underwriting of corporate securities is carried out through separate holding-company affiliates, called securities affiliates or Section 20 affiliates.
Insurance underwriters evaluate the risk and exposures of potential clients. They decide how much coverage the client should receive, how much they should pay for it, or whether even to accept the risk and insure them. Underwriting involves measuring risk exposure and determining the premium that needs to be charged to insure that risk. The function of the underwriter is to protect the company's book of business from risks that they feel will make a loss and issue insurance policies at a premium that is commensurate with the exposure presented by a risk.

Each insurance company has its own set of underwriting guidelines to help the underwriter determine whether or not the company should accept the risk. The information used to evaluate the risk of an applicant for insurance will depend on the type of coverage involved. For example, in underwriting automobile coverage, an individual's driving record is critical. As part of the underwriting process for life or health insurance, medical underwriting may be used to examine the applicant's health status (other factors may be considered as well, such as age & occupation). The factors that insurers use to classify risks should be objective, clearly related to the likely cost of providing coverage, practical to administer, consistent with applicable law, and designed to protect the long-term viability of the insurance program.

The underwriters may decline the risk or may provide a quotation in which the premiums have been loaded or in which various exclusions have been stipulated, which restrict the circumstances under which a claim would be paid. Depending on the type of insurance product (line of business), insurance companies use automated underwriting systems to encode these rules, and reduce the amount of manual work in processing quotations and policy issuance. This is especially the case for certain simpler life or personal lines (auto, homeowners) insurance. Some insurance companies, however, rely on agents to underwrite for them. This arrangement allows an insurer to operate in a market closer to its clients without having to establish a physical presence.
Other Form of Underwriting

Real estate underwriting

In evaluation of a real estate loan, in addition to assessing the borrower, the property itself is scrutinized. Underwriters use the debt service coverage ratio to figure out whether the property is capable of redeeming its own value or not.

Forensic underwriting

Forensic underwriting is the "after-the-fact" process used by lenders to determine what went wrong with a mortgage.[2] Forensic underwriting refers to a borrower's ability to work out a modification scenario with their current lien holder, not to qualify them for a new loan or a refinance. This is typically done by an underwriter staffed with a team of people who are experienced in every aspect of the real estate field.

Sponsorship underwriting

Underwriting may also refer to financial sponsorship of a venture, and is also used as a term within public broadcasting (both public television and radio) to describe funding given by a company or organization for the operations of the service, in exchange for a mention of their product or service within the station's programming.

Insurance underwriting is the process of classification, rating, and selection of risks. In simpler terms, it's a risk selection process. This selection process consists of evaluating information and resources to determine how an individual will be classified (whether a standard or substandard risk). After this classification procedure is completed, the policy is rated in terms of the premium that the applicant will be charged. The policy is then issued and subsequently delivered to the purchaser by the producer (more commonly known as the insurance agent).

The underwriter's job is to use all the information gathered from numerous sources to determine whether or not to accept a particular applicant. Individuals applying for individually-owned life and health insurance typically receive more underwriting scrutiny than members holding a group policy. As such, the concepts discussed in this article apply primarily to underwriting for individual coverage. The underwriter must employ sound judgment based on his or her years of experience to read beyond the basic
FACTS AND GET A TRUE PICTURE OF THE APPLICANT'S LIFESTYLE. FOR INSTANCE, THE UNDERWRITER WILL LOOK FOR ANY FACTORS (SUCH AS OCCUPATION, DANGEROUS HOBBIES, ETC.) THAT COULD MAKE THE APPLICANT MORE LIKELY TO DIE BEFORE HIS OR HER NATURAL LIFE EXPECTANCY, OR REASONS TO ANTICIPATE THAT THE INDIVIDUAL MAY BECOME ILL OR INVOLVED IN AN ACCIDENT THAT WILL CREATE HIGH MEDICAL EXPENSES. OF COURSE, THE UNDERWRITER CERTAINLY CANNOT - AND ISN'T EXPECTED TO - FORESEE ALL POSSIBLE CIRCUMSTANCES. THE UNDERWRITER'S PRIMARY FUNCTION IS TO PROTECT THE INSURANCE COMPANY IN SO FAR AS IS POSSIBLE AGAINST ADVERSE SELECTION (VERY POOR RISKS) AND THOSE PARTIES WHO MAY HAVE FRAUDULENT INTENT.

ADVERSE SELECTION CAN BE SAID TO EXIST WHEN A RISK (AN INDIVIDUAL) OR GROUP OF RISKS THAT ARE INSURED IS MORE LIKELY THAN THE AVERAGE CORRESPONDING GROUP TO EXPERIENCE A LOSS. AS A BASIC EXAMPLE, LET'S SAY THAT IN A RANDOMLY-SELECTED GROUP OF 1,000 25-YEAR-OLD INDIVIDUALS, ONLY TWO MIGHT BE EXPECTED TO DIE IN ANY GIVEN YEAR. HOWEVER, HUMAN NATURE IS GENERALLY SUCH THAT MANY HEALTHY 25-YEAR-OLD YOUNG ADULTS DO NOT TYPICALLY REGARD THE NEED TO BUY LIFE INSURANCE, AND THEREFORE PREFER TO SPEND THEIR MONEY ON OTHER THINGS. IT'S USUALLY ONLY THOSE 25-YEAR-OLDS WHO ARE ILL OR PERHAPS EMPLOYED IN DANGEROUS OCCUPATIONS THAT ARE LIKELY TO PURCHASE INSURANCE. THE UNDERWRITER'S JOB IS TO ENSURE THAT AN INORDINATE NUMBER OF THESE POORER-THAN-AVERAGE RISKS AREN'T ACCEPTED OR THE INSURANCE COMPANY WILL LOSE MONEY.

THE UNDERWRITER HAS A NUMBER OF RESOURCES THAT CAN BE CALLED UPON TO PROVIDE THE NECESSARY INFORMATION FOR THE RISK SELECTION PROCESS. THESE SOURCES INCLUDE:

- The policy application;
- Medical history and examinations;
- Inspection reports;
- The Medical Information Bureau (MIB); and
- The producer or insurance agent.

THE APPLICATION

THE APPLICATION IS AN ABSOLUTELY CRUCIAL DOCUMENT BECAUSE IT'S USUALLY ATTACHED TO AND INCORPORATED AS AN INTEGRAL PART OF THE INSURANCE CONTRACT. THE PRODUCER MUST THEREFORE TAKE SPECIAL CARE WITH ITS ACCURACY IN THE INTERESTS OF BOTH THE INSURANCE COMPANY AND THE
insured. The application is divided into sections, with each designed to obtain specific types of information. Although the form of the application may differ from one company to another, most provide for submission of the following data: Part 1 (General Information), Part 2 (Medical Information), the Agent's Statement or Report, and the proper signatures of all contractual parties.

*Part 1* of the application requests the insured's general or personal data, such as name and address, date of birth, business address and occupation, Social Security number, marital status, and other insurance that may be owned. Additionally, if the policy applicant and the insured are not the same person, the applicant's name and address would also be required in this section.

*Part 2* of the application is designed to provide information regarding the insured's past medical history, current physical condition, and personal morals. If the proposed insured is required to take a medical examination, Part 2 is usually completed as part of the physical exam. After reviewing the medical information contained in the application and the medical exam, the underwriter may also request an *Attending Physician's Statement*, or *APS*, from the proposed insured's doctor. The APS is typically used to obtain more specific information about a particular medical problem or issue.

The *Agent's Statement*, which is part of the application, requires that the insurance agent provide certain information regarding the proposed insured. This generally includes information regarding the agent's relationship to the insured, data about the proposed insured's financial status, habits, general character, and any other information that may be pertinent to the risk being assumed by the insurance company.

The *signature* of the insured - and the policy owner if not the same person - must be obtained in the appropriate places on the application. The producer usually also signs the document as a witness to the applicants' signatures. Additionally, the application will also contain information regarding the policy owner's choices for the mode of the premium (monthly, semiannually, annually, etc.), the use of any dividends, and the designation of beneficiaries.
Medical examinations

Medical exams and tests, when required by the insurance company, are conducted by physicians or paramedics at the expense of the insurer. Such exams usually aren’t required for health insurance (which only emphasizes the importance of the agent accurately recording medical information on the application). The medical exam requirement is much more common for life insurance underwriting than for health insurance. (As a side note, simplified issue life insurance requires no medical examination and the application asks only very basic health-related questions. This type of coverage is usually only available in low face amounts to reduce the insurance company's subjection to the hazard of adverse selection.)

Inspection reports

To supplement the information on the application, the underwriter may order an inspection report on the applicant from an independent investigating firm or credit agency, which provides financial and moral (or lifestyle choices) information. This data is used only to help determine the insurability of the applicant. If the amount of insurance being applied for is average, the inspector will typically write a general description about the applicant's finances, health, character, occupation, hobbies, and other habits. When larger amounts of coverage are requested, the inspector will provide a more detailed report. This information is based on interviews with the applicant's associates at home (including neighbors and friends), at work, and elsewhere. Such "investigative consumer reports" may not be made unless the applicant is clearly and accurately told beforehand about the report in writing. This consumer report notification is usually part of the application. At the time that the application is completed, the producer will separate the notification and present it to the applicant.

The Medical Information Bureau

Another source of information that may aid the underwriter in determining whether or not to underwrite a particular risk is the Medical Information Bureau, or MIB, which is located in Massachusetts. The MIB is a nonprofit trade association that maintains medical information on applicants for life and health insurance. It consists of well over six
hundred member companies that write more than eighty percent of the health insurance and over ninety-eight percent of the life insurance policies in the United States and Canada.

The MIB maintains an extensive database of medical information and occupational risks on applicants for life and health insurance. For every ten insurance applicants, the MIB will have a file on one or two of them. Medical Information Bureau data is reported to member companies in code form so as to preserve the confidentiality of the file's contents. The database contains no details about the individual. The codes simply alert companies to the fact that there was information obtained and reported by a member company on a particular medical impairment or vocational risk. Furthermore, the report does not disclose any action taken by other insurers, nor does it indicate the amount of insurance that was requested.

Underwriters use the MIB by comparing its file against the information contained in the prospective insured's application. If the MIB file contains a code for a condition that should be listed on the application but is not, the underwriter would then inquire more specifically about that area. For example, an MIB file might contain a code indicating that an applicant suffers from high levels of cholesterol, while the application indicates that he or she has no ongoing medical conditions. This discrepancy would prompt the underwriter to investigate whether the applicant has misrepresented his or her health status, or perhaps alternatively has recovered completely from the condition.

In addition to tracking medical and vocational information, the MIB also reports the number of times that information has been requested on an individual in the previous two years. This report is known as the Insurance Activity Index (IAI), and it's useful for two important reasons. The first is that it allows insurance companies to identify people who replace their insurance policies frequently. Since most of the costs associated with issuing a policy occur within the first year or two of coverage, insurance companies want to identify those individuals who are likely to cancel their policies within that period of time.
Second, the IAI can also help to spot situations in which an individual is accruing insurance coverage by applying for numerous smaller policies that might fall below the radar screen for other underwriting requirements. By purchasing several small- to medium-sized policies, an individual may be attempting to avoid drawing attention to the accumulation of an extremely large death benefit. This situation has occurred in several instances as part of criminal "murder for profit" schemes.

Although useful for underwriting purposes, an insurer may not refuse to accept a risk based solely on the information contained in an MIB report. There must be additional substantiating factors that lead to the decision to deny coverage to the applicant. Furthermore, the MIB must provide explanations to applicants who are denied coverage, allowing consumers to challenge possibly inaccurate information about their medical history.

**Underwriting in the field**

A key element in the underwriting process is the role of the insurance producer, or agent. It may even be argued that the producer is the most important part of the risk selection process. This is due to the fact that the producer is in a position to actually see and talk to the proposed insured, to ask the questions contained on the application and gauge the responses, and to accurately and completely record the answers to those questions. Thus, one of the most important functions of the producer is to oversee the completion of the insurance application. Much of the information reported on the document becomes the basis upon which to accept or reject the proposed risk. Furthermore, as previously stated, a signed and witnessed copy of the application also becomes part of the policy, the legal contract between the insurer and the insured.

The most essential element of this process for the producer is the display of accuracy, thoroughness, and honesty when completing the application. Answers to questions must be recorded with exactness and totality, along with frankness and sincerity. The producer may not omit pertinent information or report it inaccurately in order to facilitate the policy's issuance. The ethical conduct of the producer with regard to the underwriting process must be, in all instances, above reproach. Additionally, the producer can also
help to expedite the underwriting process by the prompt submission of the application, by
scheduling the applicant for any necessary physical exams, and by assisting the home
office underwriter with other requirements (such as obtaining an Attending Physician's
Statement), as needed.

Finally, if the applicant is rated or declined for coverage, it's the producer's role as a field
underwriter to explain the reasons for the underwriting action. Seldom is an individual
totally declined for life insurance, but it does happen that he or she may be classified as
substandard and thus receive a rated (or substandard) policy in place of the one originally
applied for. When this occurs, the producer must be prepared to not only explain the
reasons for the substandard rating but also to explain the rated policy that the company
has countered with.

Reinsurance Objectives & Types

Reinsurance is insurance that is purchased by an insurance company (the "ceding
company" or "cedant" or "cedent" under the arrangement) from one or more other
insurance companies (the "reinsurer") as a means of risk management, sometimes in
practice including tax mitigation and other reasons described below. The ceding company
and the reinsurer enter into a reinsurance agreement which details the conditions upon
which the reinsurer would pay a share of the claims incurred by the ceding company. The
reinsurer is paid a "reinsurance premium" by the ceding company, which issues insurance
policies to its own policyholders.

The reinsurer may be either a specialist reinsurance company, which only undertakes
reinsurance business, or another insurance company.

For example, assume an insurer sells 1000 policies, each with a $1 million policy limit.
Theoretically, the insurer could lose $1 million on each policy – totaling up to $1 billion.
It may be better to pass some risk to a reinsurer as this will reduce the ceding company's
exposure to risk.

There are two basic methods of reinsurance:
1. **Facultative Reinsurance**, which is negotiated separately for each insurance contract that is reinsured. Facultative reinsurance is normally purchased by ceding companies for individual risks not covered, or insufficiently covered, by their reinsurance treaties, for amounts in excess of the monetary limits of their reinsurance treaties and for unusual risks. Underwriting expenses, and in particular personnel costs, are higher for such business because each risk is individually underwritten and administered. However as they can separately evaluate each risk reinsured, the reinsurer's underwriter can price the contract to more accurately reflect the risks involved.

2. **Treaty Reinsurance** (not to be confused with the Reinsurance Treaty) means that the ceding company and the reinsurer negotiate and execute a **reinsurance contract**. The reinsurer then covers the specified share of all the insurance policies issued by the ceding company which come within the scope of that contract. The reinsurance contract may oblige the reinsurer to accept reinsurance of all contracts within the scope (known as "obligatory" reinsurance), or it may require the insurer to give the reinsurer the option to reinsure each such contract (known as "facultative-obligatory" or "fac oblig" reinsurance).

There are two main types of treaty reinsurance, proportional and non-proportional, which are detailed below. Under proportional reinsurance, the reinsurer's share of the risk is defined for each separate policy, while under non-proportional reinsurance the reinsurer's liability is based on the aggregate claims incurred by the ceding office. In the past 30 years there has been a major shift from proportional to non-proportional reinsurance in the property and casualty fields.

**Function:**

Almost all insurance companies have a reinsurance program. The ultimate goal of that program is to reduce their exposure to loss by passing part of the risk of loss to a reinsurer or a group of reinsurers. In the USA, insurance, which is regulated at the state level, permits an *insurer* only to issue policies with a maximum limit of 10% of their surplus (net worth), unless those policies are reinsured. In other jurisdictions allowance is typically made for reinsurance when determining statutory required solvency margins.
**Risk transfer**

With reinsurance, the *insurer* can issue policies with higher limits than would otherwise be allowed, thus being able to take on more risk because some of that risk is now transferred to the reinsurer. The reason for this is the number of insurers that have suffered significant losses and become financially impaired. Over the years there has been a tendency for reinsurance to become a science rather than an art: thus reinsurers have become much more reliant on actuarial models and on tight review of the companies they are willing to reinsure. They review their financials closely, examine the experience of the proposed business to be reinsured, review the underwriters that will write that business, review their rates, and much more. Almost all reinsurers now visit the insurance company and review underwriting and claim files and more.

**Income smoothing**

Reinsurance can make an insurance company's results more predictable by absorbing larger losses and reducing the amount of capital needed to provide coverage. The risks are diversified, with the reinsurer bearing some of the loss incurred by the insurance company.

**Surplus relief**

An insurance company's writings are limited by its balance sheet (this test is known as the solvency margin). When that limit is reached, an *insurer* can do one of the following: stop writing new business, increase its capital, or (in the USA) buy "surplus relief".

**Arbitrage**

The insurance company may be motivated by arbitrage in purchasing reinsurance coverage at a lower rate than they charge the insured for the underlying risk, whatever the class of insurance.

In general, the reinsurer may be able to cover the risk at a lower premium than the insurer because:

- The reinsurer may have some intrinsic cost advantage due to economies of scale or some other efficiency.
• Reinsurers may operate under weaker regulation than their clients. This enables them to use less capital to cover any risk, and to make less prudent assumptions when valuing the risk.

• Reinsurers may operate under a more favorable tax regime than their clients.

• Reinsurers will often have better access to underwriting expertise and to claims experience data, enabling them to assess the risk more accurately and reduce the need for contingency margins in pricing the risk.

• Even if the regulatory standards are the same, the reinsurer may be able to hold smaller actuarial reserves than the decant if it thinks the premiums charged by the cedant are excessively prudent.

• The reinsurer may have a more diverse portfolio of assets and especially liabilities than the cedant. This may create opportunities for hedging that the cedant could not exploit alone. Depending on the regulations imposed on the reinsurer, this may mean they can hold fewer assets to cover the risk.

• The reinsurer may have a greater risk appetite than the insurer.

Reinsurer's expertise

The insurance company may want to avail itself of the expertise of a reinsurer, or the reinsurer's ability to set an appropriate premium, in regard to a specific (specialized) risk. The reinsurer will also wish to apply this expertise to the underwriting in order to protect their own interests.

Creating a manageable and profitable portfolio of insured risks

By choosing a particular type of reinsurance method, the insurance company may be able to create a more balanced and homogeneous portfolio of insured risks. This would lend greater predictability to the portfolio results on net basis (after reinsurance) and would be reflected in income smoothing. While income smoothing is one of the objectives of reinsurance arrangements, the mechanism is by way of balancing the portfolio.
Types:

**Proportional**

Under proportional reinsurance, one or more reinsurers take a stated percentage share of each policy that an insurer produces ("writes"). This means that the reinsurer will receive that stated percentage of the premiums and will pay the same percentage of claims. In addition, the reinsurer will allow a "ceding commission" to the insurer to cover the costs incurred by the insurer (marketing, underwriting, claims etc.).

The arrangement may be "quota share" or "surplus reinsurance" (also known as surplus of line or variable quota share treaty) or a combination of the two. Under a quota share arrangement, a fixed percentage (say 75%) of each insurance policy is reinsured. Under a surplus share arrangement, the ceding company decides on a "retention limit" - say $100,000. The ceding company retains the full amount of each risk, with a maximum of $100,000 per policy or per risk, and the balance of the risk is reinsured.

The ceding company may seek a quota share arrangement for several reasons. First, they may not have sufficient capital to prudently retain all of the business that it can sell. For example, it may only be able to offer a total of $100 million in coverage, but by reinsuring 75% of it, it can sell four times as much.

The ceding company may seek surplus reinsurance simply to limit the losses it might incur from a small number of large claims as a result of random fluctuations in experience. In a 9 line surplus treaty the reinsurer would then accept up to $900,000 (9 lines). So if the insurance company issues a policy for $100,000, they would keep all of the premiums and losses from that policy. If they issue a $200,000 policy, they would give (cede) half of the premiums and losses to the reinsurer (1 line each). The maximum automatic underwriting capacity of the cedant would be $1,000,000 in this example. (Any policy larger than this would require facultative reinsurance.)

**Non-proportional**

Under non-proportional reinsurance the reinsurer only pays out if the total claims suffered by the insurer in a given period exceed a stated amount, which is called the "retention" or "priority". For instance the insurer may be prepared to accept a total loss up
to $1 million, and purchases a layer of reinsurance of $4 million in excess of this $1 million. If a loss of $3 million were then to occur, the insurer would bear $1 million of the loss and would recover $2 million from its reinsurer. In this example, the insured also retains any excess of loss over $5 million unless it has purchased a further excess layer of reinsurance.

The main forms of non-proportional reinsurance are excess of loss and stop loss.

**Excess of loss** reinsurance can have three forms - "Per Risk XL" (Working XL), "Per Occurrence or Per Event XL" (Catastrophe or Cat XL), and "Aggregate XL". In per risk, the cedant's insurance policy limits are greater than the reinsurance retention. For example, an insurance company might insure commercial property risks with policy limits up to $10 million, and then buy per risk reinsurance of $5 million in excess of $5 million. In this case a loss of $6 million on that policy will result in the recovery of $1 million from the reinsurer. These contracts usually contain event limits to prevent their misuse as a substitute for Catastrophe XLs.

In catastrophe excess of loss, the cedant's retention is usually a multiple of the underlying policy limits, and the reinsurance contract usually contains a two risk warranty (i.e. they are designed to protect the cedant against catastrophic events that involve more than one policy, usually very many policies). For example, an insurance company issues homeowners' policies with limits of up to $500,000 and then buys catastrophe reinsurance of $22,000,000 in excess of $3,000,000. In that case, the insurance company would only recover from reinsurers in the event of multiple policy losses in one event (e.g. hurricane, earthquake, and flood).

**Aggregate XL** affords a frequency protection to the reinsured. For instance if the company retains $1 million net any one vessel, $5m annual aggregate limit in excess of $5m annual aggregate deductible, the cover would equate to 5 total losses (or more partial losses) in excess of 5 total losses (or more partial losses). Aggregate covers can also be linked to the cedant's gross premium income during a 12 month period, with limit and deductible expressed as percentages and amounts. Such covers are then known as "Stop Loss" contracts.
**Risks attaching basis**

A basis under which reinsurance is provided for claims arising from policies commencing during the period to which the reinsurance relates. The *insurer* knows there is coverage during the whole policy period even if claims are only discovered or made later on.

All claims from cedant underlying policies incepting during the period of the reinsurance contract are covered even if they occur after the expiration date of the reinsurance contract. Any claims from cedant underlying policies incepting outside the period of the reinsurance contract are not covered even if they occur during the period of the reinsurance contract.

**Losses occurring basis**

A Reinsurance treaty under which all claims occurring during the period of the contract, irrespective of when the underlying policies incepted, are covered. Any losses occurring after the contract expiration date are not covered.

As opposed to claims-made or risks attaching contracts. Insurance coverage is provided for losses occurring in the defined period. This is the usual basis of cover for short tail business.

**Claims-made basis**

A policy which covers all claims reported to an *insurer* within the policy period irrespective of when they occurred.

**Contract:**

Most of the above examples concern reinsurance contracts that cover more than one policy (treaty). Reinsurance can also be purchased on a per policy basis, in which case it is known as *facultative reinsurance*. Facultative reinsurance can be written on either a quota share or excess of loss basis. Facultative reinsurance is commonly used for large or unusual risks that do not fit within standard reinsurance treaties due to their exclusions. The term of a facultative agreement coincides with the term of the policy. Facultative reinsurance is usually purchased by the insurance underwriter who underwrote the original insurance policy, whereas treaty reinsurance is typically purchased by a senior executive at the insurance company.
Reinsurance treaties can either be written on a "continuous" or "term" basis. A continuous contract has no predetermined end date, but generally either party can give 90 days’ notice to cancel or amend the treaty. A term agreement has a built-in expiration date. It is common for insurers and reinsurers to have long term relationships that span many years.

Fronting:

Sometimes insurance companies wish to offer insurance in jurisdictions where they are not licensed: for example, an insurer may wish to offer insurance programmed to a multinational company, to cover property and liability risks in many countries around the world. In such situations, the insurance company may find a local insurance company which is authorized in the relevant country, arrange for the local insurer to issue an insurance policy covering the risks in that country, and enter into a reinsurance contract with the local insurer to transfer the risks. In the event of a loss, the policyholder would claim against the local insurer under the local insurance policy, the local insurer would pay the claim and would claim reimbursement under the reinsurance contract. Such an arrangement is called "fronting". Fronting is also sometimes used where an insurance buyer requires its insurers to have a certain financial strength rating and the prospective insurer does not satisfy that requirement: the prospective insurer may be able to persuade another insurer, with the requisite credit rating, to provide the coverage to the insurance buyer, and to take out reinsurance in respect of the risk. An insurer which acts as a "fronting insurer" receives a fronting fee for this service to cover administration and the potential default of the reinsurer. The fronting insurer is taking a risk in such transactions, because it has an obligation to pay its insurance claims even if the reinsurer becomes insolvent and fails to reimburse the claims.

Market:

Many reinsurance placements are not placed with a single reinsurer but are shared between a numbers of reinsurers. For example a $30,000,000 excess of $20,000,000 layer may be shared by 30 or more reinsurers. The reinsurer who sets the terms (premium and contract conditions) for the reinsurance contract is called the lead reinsurer; the other companies subscribing to the contract are called following reinsurers. Alternatively, one
reinsurer can accept the whole of the reinsurance and then retrocede it (pass it on in a further reinsurance arrangement) to other companies.

About half of all reinsurance is handled by reinsurance brokers who then place business with reinsurance companies. The other half is with "direct writing" reinsurers who have their own sales staff and deal with the ceding companies directly. In Europe reinsurers write both direct and brokered accounts.

Using game-theoretic modeling, Professors Michael R. Powers (Temple University) and Martin Shubik (Yale University) have argued that the number of active reinsurers in a given national market should be approximately equal to the square-root of the number of primary insurers active in the same market. Econometric analysis has provided empirical support for the Powers-Shubik rule.

**Indian Fire Reinsurance Programme:**

**Procedure to be followed for Reinsurance Arrangements**

1. The Reinsurance Programme of every (re)insurer shall be guided by the following objectives to:
   - Maximize retention within the country;
   - Develop adequate capacity;
   - Secure the best possible protection for the reinsurance costs incurred;
   - Simplify the administration of business.

2. Every (re)insurer shall maintain the maximum possible retention commensurate with its financial strength, quality of risks and volume of business. The Authority may require an (re)insurer to justify its retention policy and may give such directions as considered necessary in order to ensure that the Indian (re)insurer is not merely fronting for a foreign insurer.

3. Every insurer shall cede such percentage of the sum assured on each policy for different classes of insurance written in India to the Indian reinsurer/s as may be specified by the Authority in accordance with the provisions of Part IVA of the Insurance Act, 1938.

4. The reinsurance programme of every (re)insurer shall commence from the beginning of every financial year. Every (re)insurer shall submit to the Authority, his reinsurance...
programme for the forthcoming year, 45 days before the commencement of the financial year. Notwithstanding what is stated above, the Authority, if it considers necessary, may direct the (re)insurer to carry out changes to the reinsurance programme filed with it and the (re)insurer shall incorporate such changes forthwith in their reinsurance programme.

(5) The (re)insurers shall ensure that the reinsurance arrangements in respect of catastrophe accumulations, using various realistic disaster scenario testing are adequate and approved by their Board of Directors before filing the same with the Authority along with their reinsurance programme.

(6) Within 30 days of the commencement of the financial year, every (re)insurer shall file with the Authority a copy of every reinsurance treaty contract wording and excess of loss cover covernote in respect of that year together with the list of reinsurers their ratings and their shares in the reinsurance arrangement. All reinsurance arrangements must be documented and filed with the Authority within 30 days of commencement of the financial year.

(7) The Authority may call for further information or explanations in respect of the reinsurance programme of an (re)insurer and may issue such direction, as it considers necessary.

(8) Every (re)insurer shall file with the Authority any new reinsurance arrangement, giving full details, documentation, reasons for such an arrangement together with the approval of the Board of Directors within 15 days of holding the Board meeting. The (re)insurer shall further ensure that the renewal of such a reinsurance arrangement coincides with financial year.

(9) (Re)Insurers shall place their reinsurance business outside India with only those reinsurers who have over a period of the past five years counting from the year preceding for which the business has to be placed, enjoyed a credit rating of at least BBB (with Standard & Poor) or equivalent rating of any other international rating agency. The (re)insurers shall consider past claims performance of the reinsurers while accepting their participation in the reinsurance programme. Placements with other reinsurers shall require the approval of the Authority. (Re)Insurers may also place reinsurances with Lloyd’s syndicates taking care to limit placements with individual syndicates to such shares as are commensurate with the capacity of the syndicate.
(10) The Indian Reinsurer shall organize domestic pools for reinsurance surpluses in fire, marine hull and other classes in consultation with all insurers on basis, limits and terms which are fair to all insurers and assist in maintaining the retention of business within India at such percentages as the Authority may specify from time to time. The arrangements so made shall be submitted to the Authority within three months of the formation of such pools, for approval.

(11) Surplus over and above the domestic reinsurance arrangements class-wise can be placed by the (re)insurer independently with any of the reinsurers complying with sub-regulation

Guidelines on File & Use Procedures

The guidelines on file and use requirements for general insurance products have been reviewed based on the experience gained so far and taking into account the feedback received. The present guidelines issued in view of the proposed detariffing of all classes of non-life insurance business, supersede guidelines issued earlier by the Authority and are being issued under the provisions of Section 14 (2) (i) of the IRDA Act 1999. These guidelines apply to all general insurance products whether governed by tariff now or not. These guidelines should be placed before the Board of Directors and a copy should be provided to all persons concerned.

Applicability

1. For the purpose of these guidelines an insurance product also includes a plan of insurance designed to meet the requirements of a client or class of clients. These guidelines shall come into effect on 01st November 2006. Rates proposed to be charged in respect of products which are currently under tariff, after the tariffs are removed, shall be filed under these guidelines after 01st November 2006. However, these changes can only be implemented after the tariffs are removed.

Prohibition on variations in tariff coverage’s, wordings, endorsements and warranties

2. Insurers shall not vary the coverage, terms and conditions, wordings, warranties, clauses and endorsements in respect of covers that are currently under tariffs till 31st March 2008. Insurers may file their proposals for changes in cover, terms, wordings, etc for such products from a date to be notified by the Authority, but to be given effect to after 31 March 2008. In respect of products currently governed by tariffs, deductibles
other than the deductibles set out in the tariffs can be offered only after 31 March 2008. Insurance on first loss basis or partial insurances unless permitted under current tariffs shall not be permitted before 31-03-2008. Covers not permitted under tariffs should not be granted by way of ‘difference in conditions’ in insurance till 31.3.2008.

Marine hull insurance business shall continue to be governed by the Authority’s circular No.IRDA/CIR/Mrn-Hull/086/Mar-05 dated 23rd March 2005 till further notice.

3. While filing the products, insurers are advised to take into account the requirements of IRDA relating to design and rating of insurance products. They are further advised to do an internal verification of the products before filing them with IRDA so as to avoid queries from IRDA.

The requirements of IRDA are as follows:

(i) Design and rating of products must always be on sound and prudent underwriting basis. The contingencies insured under the product should be clear and provide transparent cover which is of value to the insured.

(ii) All literature relating to the product should be in simple language and easily understandable to the public at large. As far as possible, a similar sequence of presentation may be followed. All technical terms should be clarified in simple language for the benefit of the insured.

(iii) The product should be a genuine insurance product of an insurable risk with a real risk transfer. “Alternate risk transfer” or “financial guarantee” business in any form will not be accepted.

(iv) The insurance product should comply with all the requirements of the Protection of Policyholders’ Interests Regulations 2002.

(v) Insurers should use as far as possible, similar wordings for describing the same cover or the same requirement across all their products. For example clauses on renewal of insurance, basis of insurance, due diligence, cancellation, arbitration etc., should have similar wordings across all products.

(vi) The pricing of products should be based on appropriate data and with technical justification.

(vii) The terms and conditions of cover shall be fair between the insurer and the insured.
(viii) Margins built into rates shall be consistent with the experience of the insurer in respect of commission, management expenses, contingencies and profit.
(ix) Insurer should take necessary steps in ensuring that competition will not lead to unprincipled rate cutting and other improper underwriting practices.

**Filing of products**

4. Important: Filing of products will be accepted only after the insurer has filed the Underwriting Policy as approved by its Board and satisfied any queries raised by IRDA thereon. Once an insurance product has been filed and IRDA has no queries on the product, the insurer is expected not to make frequent changes in that product. IRDA may allow changes in the product only on sufficient technical justification. Any proposals for changes within 6 months of first introduction of a product will be subject to strict scrutiny for ascertaining the need for such a change.

5. In normal circumstances the insurer should provide at least 15 days notice for cancellation of cover. Policies that are long-term in nature and annual policies that are regularly being renewed or where there is a reasonable expectation of being renewed, should not be refused renewal or be cancelled without providing sufficient justification.

**File and Use requirement**

11. No general insurance product may be sold to any person unless the requirements of these guidelines have been complied with in respect of that product. Where individual particulars of the product are required to be filed with IRDA, such product shall not be sold unless the required particulars have been filed with IRDA and IRDA has no queries in respect of rates, terms and conditions or the accompanying documents of that product within a period of thirty days from the date of receipt of the filing in its office. Where IRDA raises any query in relation to a product within the stipulated period of thirty days, the insurer shall not offer that product for sale until all queries have been satisfactorily resolved and IRDA confirms in writing that it has no further queries in respect of that product. Where an insurer provides clarifications in response to queries raised by IRDA, IRDA can be expected to respond within 15 days from the date of receipt of the insurer’s observations. If IRDA raises no further queries or observations, the product may be used thereafter. It should be the joint effort of both the insurer and IRDA to ensure that the entire procedure is accomplished within 60 days. To this end, the initial letter from IRDA
seeking clarifications will be as complete as possible. Likewise, the insurer should respond to any queries by IRDA as quickly as possible. This requirement will apply mutatis mutandis in cases where the underwriting policy under which the products are designed, need to be filed instead of filing of particulars of individual product. In respect of a product that has been filed earlier and no queries subsist in respect of such product, if the insurer changes the premium rates or deductibles but not the terms and conditions and policy wording of the cover, the insurer need not obtain a fresh certification by a lawyer under para 25(iv) below. Where the wordings alone are changed and the change is minor and is clarificatory in nature, the insurer may file the certificate of the lawyer with a covering letter explaining the changes proposed and IRDA may waive the full filing requirement as stated in Para 25 in such a case.

Corporate Governance

Corporate governance refers to the system by which corporations are directed and controlled. The governance structure specifies the distribution of rights and responsibilities among different participants in the corporation (such as the board of directors, managers, shareholders, creditors, auditors, regulators, and other stakeholders) and specifies the rules and procedures for making decisions in corporate affairs. Governance provides the structure through which corporations set and pursue their objectives, while reflecting the context of the social, regulatory and market environment. Governance is a mechanism for monitoring the actions, policies and decisions of corporations. Governance involves the alignment of interests among the stakeholders.

There has been renewed interest in the corporate governance practices of modern corporations, particularly in relation to accountability, since the high-profile collapses of a number of large corporations during 2001–2002, most of which involved accounting fraud. Corporate scandals of various forms have maintained public and political interest in the regulation of corporate governance. In the U.S., these include Enron Corporation and MCI Inc. (formerly WorldCom). Their demise is associated with the U.S. federal government passing the Sarbanes-Oxley Act 2002, intending to restore public confidence in corporate governance. Comparable failures in Australia (HIH, One.Tel) are associated with the eventual passage of the CLERP 9 reforms. Similar
corporate failures in other countries stimulated increased regulatory interest (e.g., Parmalatin Italy).

**Other Definitions:**

Corporate governance has also been defined as "a system of law and sound approaches by which corporations are directed and controlled focusing on the internal and external corporate structures with the intention of monitoring the actions of management and directors and thereby mitigating agency risks which may stem from the misdeeds of corporate officers."

In contemporary business corporations, the main external stakeholder groups are shareholders, debt holders, trade creditors, suppliers, customers and communities affected by the corporation's activities. Internal stakeholders are the board of directors, executives, and other employees.

Much of the contemporary interest in corporate governance is concerned with mitigation of the conflicts of interests between stakeholders. Ways of mitigating or preventing these conflicts of interests include the processes, customs, policies, laws, and institutions which have an impact on the way a company is controlled. An important theme of governance is the nature and extent of corporate accountability.

A related but separate thread of discussions focuses on the impact of a corporate governance system on economic efficiency, with a strong emphasis on shareholders' welfare. In large firms where there is a separation of ownership and management and no controlling shareholder, the principal–agent issue arises between upper-management (the "agent") which may have very different interests, and by definition considerably more information, than shareholders (the "principals"). The danger arises that rather than overseeing management on behalf of shareholders, the board of directors may become insulated from shareholders and beholden to management. This aspect is particularly present in contemporary public debates and developments in regulatory policy.(see regulation and policy regulation).

Economic analysis has resulted in a literature on the subject. One source defines corporate governance as "the set of conditions that shapes the ex post bargaining over the
quasi-rents generated by a firm.” The firm itself is modeled as a governance structure acting through the mechanisms of contract. Here corporate governance may include its relation to corporate finance.

**Principle of Corporate Governance:**

Contemporary discussions of corporate governance tend to refer to principles raised in three documents released since 1990: The Cadbury Report (UK, 1992), the Principles of Corporate Governance (OECD, 1998 and 2004), the Sarbanes-Oxley Act of 2002 (US, 2002). The Cadbury and OECD reports present general principles around which businesses are expected to operate to assure proper governance. The Sarbanes-Oxley Act, informally referred to as Sarbox or Sox, is an attempt by the federal government in the United States to legislate several of the principles recommended in the Cadbury and OECD reports.

- **Rights and equitable treatment of shareholders:** Organizations should respect the rights of shareholders and help shareholders to exercise those rights. They can help shareholders exercise their rights by openly and effectively communicating information and by encouraging shareholders to participate in general meetings.

- **Interests of other stakeholders:** Organizations should recognize that they have legal, contractual, social, and market driven obligations to non-shareholder stakeholders, including employees, investors, creditors, suppliers, local communities, customers, and policy makers.

- **Role and responsibilities of the board:** The board needs sufficient relevant skills and understanding to review and challenge management performance. It also needs adequate size and appropriate levels of independence and commitment.

- **Integrity and ethical behavior:** Integrity should be a fundamental requirement in choosing corporate officers and board members. Organizations should develop a code of conduct for their directors and executives that promotes ethical and responsible decision making.

- **Disclosure and transparency:** Organizations should clarify and make publicly known the roles and responsibilities of board and management to provide stakeholders with a level of accountability. They should also implement
procedures to independently verify and safeguard the integrity of the company's financial reporting. Disclosure of material matters concerning the organization should be timely and balanced to ensure that all investors have access to clear, factual information.

**Corporate governance model**

There are many different models of corporate governance around the world. These differ according to the variety of capitalism in which they are embedded. The Anglo-American "model" tends to emphasize the interests of shareholders. The coordinated or Multi stakeholder Model associated with Continental Europe and Japan also recognizes the interests of workers, managers, suppliers, customers, and the community. A related distinction is between market-orientated and network-orientated models of corporate governance.

**Continental Europe**

Some continental European countries, including Germany and the Netherlands, require a two-tiered Board of Directors as a means of improving corporate governance. In the two-tiered board, the Executive Board, made up of company executives, generally runs day-to-day operations while the supervisory board, made up entirely of non-executive directors who represent shareholders and employees, hires and fires the members of the executive board, determines their compensation, and reviews major business decisions. See also Aktiengesellschaft.

**India**

India's SEBI Committee on Corporate Governance defines corporate governance as the "acceptance by management of the inalienable rights of shareholders as the true owners of the corporation and of their own role as trustees on behalf of the shareholders. It is about commitment to values, about ethical business conduct and about making a distinction between personal & corporate funds in the management of a company."[28] It has been suggested that the Indian approach is drawn from the Gandhian principle of trusteeship and the Directive Principles of the Indian Constitution, but this conceptualization of corporate objectives is also prevalent in Anglo-American and most other jurisdictions.
United States, United Kingdom

The so-called "Anglo-American model" of corporate governance emphasizes the interests of shareholders. It relies on a single-tiered Board of Directors that is normally dominated by non-executive directors elected by shareholders. Because of this, it is also known as "the unitary system". Within this system, many boards include some executives from the company (who are ex officio members of the board). Non-executive directors are expected to outnumber executive directors and hold key posts, including audit and compensation committees. The United States and the United Kingdom differ in one critical respect with regard to corporate governance: In the United Kingdom, the CEO generally does not also serve as Chairman of the Board, whereas in the US having the dual role is the norm, despite major misgivings regarding the impact on corporate governance.

In the United States, corporations are directly governed by state laws, while the exchange (offering and trading) of securities in corporations (including shares) is governed by federal legislation. Many US states have adopted the Model Business Corporation Act, but the dominant state law for publicly traded corporations is Delaware, which continues to be the place of incorporation for the majority of publicly traded corporations. Individual rules for corporations are based upon the corporate charter and, less authoritatively, the corporate bylaws. Shareholders cannot initiate changes in the corporate charter although they can initiate changes to the corporate bylaws.

Legal environment – General

Corporations are created as legal persons by the laws and regulations of a particular jurisdiction. These may vary in many respects between countries, but a corporation's legal person status is fundamental to all jurisdictions and is conferred by statute. This allows the entity to hold property in its own right without reference to any particular real person. It also results in the perpetual existence that characterizes the modern corporation. The statutory granting of corporate existence may arise from general purpose legislation (which is the general case) or from a statute to create a specific corporation, which was the only method prior to the 19th century.
In addition to the statutory laws of the relevant jurisdiction, corporations are subject to common law in some countries, and various laws and regulations affecting business practices. In most jurisdictions, corporations also have a constitution that provides individual rules that govern the corporation and authorize or constrain its decision-makers. This constitution is identified by a variety of terms; in English-speaking jurisdictions, it is usually known as the Corporate Charter or the [Memorandum] and Articles of Association. The capacity of shareholders to modify the constitution of their corporation can vary substantially.

The U.S. passed the Foreign Corrupt Practices Act (FCPA) in 1977, with subsequent modifications. This law made it illegal to bribe government officials and required corporations to maintain adequate accounting controls. It is enforced by the U.S. Department of Justice and the Securities and Exchange Commission (SEC). Substantial civil and criminal penalties have been levied on corporations and executives convicted of bribery.

The UK passed the Bribery Act in 2010. This law made it illegal to bribe either government or private citizens or make facilitating payments (i.e., payment to a government official to perform their routine duties more quickly). It also required corporations to establish controls to prevent bribery.

**Sarbanes-Oxley Act of 2002**

The Sarbanes-Oxley Act of 2002 was enacted in the wake of a series of high profile corporate scandals. It established a series of requirements that affect corporate governance in the U.S. and influenced similar laws in many other countries. The law required, along with many other elements, that:

- The Public Company Accounting Oversight Board (PCAOB) is established to regulate the auditing profession, which had been self-regulated prior to the law. Auditors are responsible for reviewing the financial statements of corporations and issuing an opinion as to their reliability.
- The Chief Executive Officer (CEO) and Chief Financial Officer (CFO) attest to the financial statements. Prior to the law, CEO's had claimed in court they hadn't reviewed the information as part of their defense.
- Board audit committees have members that are independent and disclose whether or not at least one is a financial expert, or reasons why no such expert is on the audit committee.
- External audit firms cannot provide certain types of consulting services and must rotate their lead partner every 5 years. Further, an audit firm cannot audit a company if those in specified senior management roles worked for the auditor in the past year. Prior to the law, there was the real or perceived conflict of interest between providing an independent opinion on the accuracy and reliability of financial statements when the same firm was also providing lucrative consulting services.

**Codes and Guidelines:**

Corporate governance principles and codes have been developed in different countries and issued from stock exchanges, corporations, institutional investors, or associations (institutes) of directors and managers with the support of governments and international organizations. As a rule, compliance with these governance recommendations is not mandated by law, although the codes linked to stock exchange listing requirements may have a coercive effect.

**OECD principles**

One of the most influential guidelines has been the OECD Principles of Corporate Governance—published in 1999 and revised in 2004. The OECD guidelines are often referenced by countries developing local codes or guidelines. Building on the work of the OECD, other international organizations, private sector associations and more than 20 national corporate governance codes formed the United Nations Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) to produce their Guidance on Good Practices in Corporate Governance Disclosure. This internationally agreed benchmark consists of more than fifty distinct disclosure items across five broad categories:
- Auditing
- Board and management structure and process
- Corporate responsibility and compliance
- Financial transparency and information disclosure
- Ownership structure and exercise of control rights

**Stock exchange listing standards**

Companies listed on the New York Stock Exchange (NYSE) and other stock exchanges are required to meet certain governance standards. For example, the NYSE Listed Company Manual requires, among many other elements:

- Independent directors: "Listed companies must have a majority of independent directors...Effective boards of directors exercise independent judgment in carrying out their responsibilities. Requiring a majority of independent directors will increase the quality of board oversight and lessen the possibility of damaging conflicts of interest." An independent director is not part of management and has no "material financial relationship" with the company.

- Board meetings that exclude management: "To empower non-management directors to serve as a more effective check on management, the non-management directors of each listed company must meet at regularly scheduled executive sessions without management."

- Boards organize their members into committees with specific responsibilities per defined charters. "Listed companies must have a nominating/corporate governance committee composed entirely of independent directors." This committee is responsible for nominating new members for the board of directors. Compensation and Audit Committees are also specified, with the latter subject to a variety of listing standards as well as outside regulations.

**Other guidelines**

The investor-led organization International Corporate Governance Network (ICGN) was set up by individuals centered on the ten largest pension funds in the world 1995. The aim is to promote global corporate governance standards. The network is led by investors that manage 18 trillion dollars and members are located in fifty different countries. ICGN
has developed a suite of global guidelines ranging from shareholder rights to business ethics.

The World Business Council for Sustainable Development (WBCSD) has done work on corporate governance, particularly on accountability and reporting, and in 2004 released Issue Management Tool: Strategic challenges for business in the use of corporate responsibility codes, standards, and frameworks. This document offers general information and a perspective from a business association/think-tank on a few key codes, standards and frameworks relevant to the sustainability agenda.

In 2009, the International Finance Corporation and the UN Global Compact released a report, Corporate Governance - the Foundation for Corporate Citizenship and Sustainable Business, linking the environmental, social and governance responsibilities of a company to its financial performance and long-term sustainability.

Most codes are largely voluntary. An issue raised in the U.S. since the 2005 Disney decision is the degree to which companies manage their governance responsibilities; in other words, do they merely try to supersede the legal threshold, or should they create governance guidelines that ascend to the level of best practice. For example, the guidelines issued by associations of directors, corporate managers and individual companies tend to be wholly voluntary but such documents may have a wider effect by prompting other companies to adopt similar practices.

**History:**

In the 20th century in the immediate aftermath of the Wall Street Crash of 1929 legal scholars such as Adolf Augustus Berle, Edwin Dodd, and Gardiner C. Means pondered on the changing role of the modern corporation in society. From the Chicago school of economics, Ronald Coase introduced the notion of transaction costs into the understanding of why firms are founded and how they continue to behave.

US expansion after World War II through the emergence of multinational corporations saw the establishment of the managerial class. Studying and writing about the new class were several Harvard Business School management professors: Myles Mace (entrepreneurship), Alfred D. Chandler, Jr. (business history), Jay
Lorsch (organizational behavior) and Elizabeth MacIver (organizational behavior). According to Lorsch and MacIver "many large corporations have dominant control over business affairs without sufficient accountability or monitoring by their board of directors." In the 1980s, Eugene Fama and Michael Jensen established the principal–agent problem as a way of understanding corporate governance: the firm is seen as a series of contracts. Over the past three decades, corporate directors’ duties in the U.S. have expanded beyond their traditional legal responsibility of duty of loyalty to the corporation and its shareholders.

In the first half of the 1990s, the issue of corporate governance in the U.S. received considerable press attention due to the wave of CEO dismissals (e.g.: IBM, Kodak, Honeywell) by their boards. The California Public Employees' Retirement System (CalPERS) led a wave of institutional shareholder activism (something only very rarely seen before), as a way of ensuring that corporate value would not be destroyed by the now traditionally cozy relationships between the CEO and the board of directors (e.g., by the unrestrained issuance of stock options, not infrequently back dated).

In the early 2000s, the massive bankruptcies (and criminal malfeasance) of Enron and Worldcom, as well as lesser corporate scandals, such as Adelphia Communications, AOL, Arthur Andersen, Global Crossing, Tyco, led to increased political interest in corporate governance. This is reflected in the passage of the Sarbanes-Oxley Act of 2002. Other triggers for continued interest in the corporate governance of organizations included the financial crisis of 2008/9 and the level of CEO pay.

**East Asia**

In 1997, the East Asian Financial Crisis severely affected the economies of Thailand, Indonesia, South Korea, Malaysia, and the Philippines through the exit of foreign capital after property assets collapsed. The lack of corporate governance mechanisms in these countries highlighted the weaknesses of the institutions in their economies.
**Parties:**

Key parties involved in corporate governance include stakeholders such as the board of directors, management and shareholders. External stakeholders such as creditors, auditors, customers, suppliers, government agencies, and the community at large also exert influence. The agency view of the corporation posits that the shareholder forgoes decision rights (control) and entrusts the manager to act in the shareholders' best (joint) interests. Partly as a result of this separation between the two investors and managers, corporate governance mechanisms include a system of controls intended to help align managers' incentives with those of shareholders. Agency concerns (risk) are necessarily lower for a controlling shareholder.

**Responsibilities of the board of directors**

Former Chairman of the Board of General Motors John G. Smale wrote in 1995: "The board is responsible for the successful perpetuation of the corporation. That responsibility cannot be relegated to management." A board of directors is expected to play a key role in corporate governance. The board has responsibility for: CEO selection and succession; providing feedback to management on the organization's strategy; compensating senior executives; monitoring financial health, performance and risk; and ensuring accountability of the organization to its investors and authorities. Boards typically have several committees (e.g., Compensation, Nominating and Audit) to perform their work.

The OECD Principles of Corporate Governance (2004) describe the responsibilities of the board; some of these are summarized below:

- Board members should be informed and act ethically and in good faith, with due diligence and care, in the best interest of the company and the shareholders.
- Review and guide corporate strategy, objective setting, major plans of action, risk policy, capital plans, and annual budgets.
- Oversee major acquisitions and divestitures.
- Select, compensate, monitor and replace key executives and oversee succession planning.
- Align key executive and board remuneration (pay) with the longer-term interests of the company and its shareholders.
- Ensure a formal and transparent board member nomination and election process.
- Ensure the integrity of the corporations accounting and financial reporting systems, including their independent audit.
- Ensure appropriate systems of internal control are established.
- Oversee the process of disclosure and communications.
- Where committees of the board are established, their mandate, composition and working procedures should be well-defined and disclosed.

**Stakeholder interests**

All parties to corporate governance have an interest, whether direct or indirect, in the financial performance of the corporation. Directors, workers and management receive salaries, benefits and reputation, while investors expect to receive financial returns. For lenders, it is specified interest payments, while returns to equity investors arise from dividend distributions or capital gains on their stock. Customers are concerned with the certainty of the provision of goods and services of an appropriate quality; suppliers are concerned with compensation for their goods or services, and possible continued trading relationships. These parties provide value to the corporation in the form of financial, physical, human and other forms of capital. Many parties may also be concerned with corporate social performance.

A key factor in a party's decision to participate in or engage with a corporation is their confidence that the corporation will deliver the party's expected outcomes. When categories of parties (stakeholders) do not have sufficient confidence that a corporation is being controlled and directed in a manner consistent with their desired outcomes, they are less likely to engage with the corporation. When this becomes an endemic system feature, the loss of confidence and participation in markets may affect many other stakeholders, and increases the likelihood of political action. There is substantial interest in how external systems and institutions, including markets, influence corporate governance.
Control and ownership structures

Control and ownership structure refers to the types and composition of shareholders in a corporation. In some countries such as most of Continental Europe, ownership is not necessarily equivalent to control due to the existence of e.g. dual-class shares, ownership pyramids, voting coalitions, proxy votes and clauses in the articles of association that confer additional voting rights to long-term shareholders. Ownership is typically defined as the ownership of cash flow rights whereas control refers to ownership of control or voting rights. Researchers often "measure" control and ownership structures by using some observable measures of control and ownership concentration or the extent of inside control and ownership. Some features or types of control and ownership structure involving corporate groups include pyramids, cross-shareholdings, rings, and webs. German "concerns" is legally recognized corporate groups with complex structures. Japanese keiretsu and South Korean chaebol (which tend to be family-controlled) are corporate groups which consist of complex interlocking business relationships and shareholdings. Cross-shareholding are an essential feature of keiretsu and chaebol groups. Corporate engagement with shareholders and other stakeholders can differ substantially across different control and ownership structures.

Family control

Family interests dominate ownership and control structures of some corporations, and it has been suggested the oversight of family controlled corporation is superior to that of corporations "controlled" by institutional investors (or with such diverse share ownership that they are controlled by management). A recent study by Credit Suisse found that companies in which "founding families retain a stake of more than 10% of the company's capital enjoyed a superior performance over their respective sectorial peers." Since 1996, this superior performance amounts to 8% per year. Forget the celebrity CEO. "Look beyond Six Sigma and the latest technology fad. One of the biggest strategic advantages a company can have is blood ties," according to a Business Week study.

Diffuse shareholders

The significance of institutional investors varies substantially across countries. In developed Anglo-American countries (Australia, Canada, New Zealand, U.K., U.S.),
institutional investors dominate the market for stocks in larger corporations. While the majority of the shares in the Japanese market are held by financial companies and industrial corporations, these are not institutional investors if their holdings are largely with-on group.

The largest pools of invested money (such as the mutual fund 'Vanguard 500', or the largest investment management firm for corporations, State Street Corp.) are designed to maximize the benefits of diversified investment by investing in a very large number of different corporations with sufficient liquidity. The idea is this strategy will largely eliminate individual firm financial or other risk and. A consequence of this approach is that these investors have relatively little interest in the governance of a particular corporation. It is often assumed that, if institutional investors pressing for will likely be costly because of "golden handshakes" or the effort required, they will simply sell out their interest.

Corporate governance mechanisms and controls are designed to reduce the inefficiencies that arise from moral hazard and adverse selection. There are both internal monitoring systems and external monitoring systems. Internal monitoring can be done, for example, by one (or a few) large shareholder(s) in the case of privately held companies or a firm belonging to a business group. Furthermore, the various board mechanisms provide for internal monitoring. External monitoring of managers' behavior occurs when an independent third party (e.g. the external auditor) attests the accuracy of information provided by management to investors. Stock analysts and debt holders may also conduct such external monitoring. An ideal monitoring and control system should regulate both motivation and ability, while providing incentive alignment toward corporate goals and objectives. Care should be taken that incentives are not so strong that some individuals are tempted to cross lines of ethical behavior, for example by manipulating revenue and profit figures to drive the share price of the company up.

**Internal corporate governance controls**

Internal corporate governance controls monitor activities and then take corrective action to accomplish organizational goals. Examples include:
- **Monitoring by the board of directors**: The board of directors, with its legal authority to hire, fire and compensate top management, safeguards invested capital. Regular board meetings allow potential problems to be identified, discussed and avoided. Whilst non-executive directors are thought to be more independent, they may not always result in more effective corporate governance and may not increase performance. Different board structures are optimal for different firms. Moreover, the ability of the board to monitor the firm's executives is a function of its access to information. Executive directors possess superior knowledge of the decision-making process and therefore evaluate top management on the basis of the quality of its decisions that lead to financial performance outcomes, *ex ante*. It could be argued, therefore, that executive directors look beyond the financial criteria.

- **Internal control procedures and internal auditors**: Internal control procedures are policies implemented by an entity's board of directors, audit committee, management, and other personnel to provide reasonable assurance of the entity achieving its objectives related to reliable financial reporting, operating efficiency, and compliance with laws and regulations. Internal auditors are personnel within an organization who test the design and implementation of the entity's internal control procedures and the reliability of its financial reporting.

- **Balance of power**: The simplest balance of power is very common; require that the President be a different person from the Treasurer. This application of separation of power is further developed in companies where separate divisions check and balance each other's actions. One group may propose company-wide administrative changes, another group review and can veto the changes, and a third group check that the interests of people (customers, shareholders, employees) outside the three groups are being met.

- **Remuneration**: Performance-based remuneration is designed to relate some proportion of salary to individual performance. It may be in the form of cash or non-cash payments such as shares and share options, superannuation or other benefits. Such incentive schemes, however, are reactive in the sense that they provide no
mechanism for preventing mistakes or opportunistic behavior, and can elicit myopic behavior. Monitoring by large shareholders and/or monitoring by banks and other large creditors: Given their large investment in the firm, these stakeholders have the incentives, combined with the right degree of control and power, to monitor the management.

In publicly traded U.S. corporations, boards of directors are largely chosen by the President/CEO and the President/CEO often takes the Chair of the Board position for his/herself (which makes it much more difficult for the institutional owners to "fire" him/her). The practice of the CEO also being the Chair of the Board is known as "duality". While this practice is common in the U.S., it is relatively rare elsewhere. In the U.K., successive codes of best practice have recommended against duality.

**External corporate governance controls**

External corporate governance controls encompass the controls external stakeholders exercise over the organization. Examples include:

- competition
- debt covenants
- demand for and assessment of performance information (especially financial statements)
- government regulations
- managerial labor market
- media pressure
- takeovers

**Financial reporting and the independent auditor**

The board of directors has primary responsibility for the corporation's external financial reporting functions. The Chief Executive Officer and Chief Financial Officer are crucial participants and boards usually have a high degree of reliance on them for the integrity and supply of accounting information. They oversee the internal accounting systems, and are dependent on the corporation's accountants and internal auditors.
Current accounting rules under International Accounting Standards and U.S. GAAP allow managers some choice in determining the methods of measurement and criteria for recognition of various financial reporting elements. The potential exercise of this choice to improve apparent performance (see creative accounting and earnings management) increases the information risk for users. Financial reporting fraud, including non-disclosure and deliberate falsification of values also contributes to users' information risk. To reduce this risk and to enhance the perceived integrity of financial reports, corporation financial reports must be audited by an independent external auditor who issues a report that accompanies the financial statements.

One area of concern is whether the auditing firm acts as both the independent auditor and management consultant to the firm they are auditing. This may result in a conflict of interest which places the integrity of financial reports in doubt due to client pressure to appease management. The power of the corporate client to initiate and terminate management consulting services and, more fundamentally, to select and dismiss accounting firms contradicts the concept of an independent auditor. Changes enacted in the United States in the form of the Sarbanes-Oxley Act (following numerous corporate scandals, culminating with the Enron scandal) prohibit accounting firms from providing both auditing and management consulting services. Similar provisions are in place under clause 49 of Standard Listing Agreement in India.

**Systematic:**

- Demand for information: In order to influence the directors, the shareholders must combine with others to form a voting group which can pose a real threat of carrying resolutions or appointing directors at a general meeting.
- Monitoring costs: A barrier to shareholders using good information is the cost of processing it, especially to a small shareholder. The traditional answer to this problem is the efficient market hypothesis (in finance, the efficient market hypothesis (EMH) asserts that financial markets are efficient), which suggests that the small shareholder will free ride on the judgments of larger professional investors.
Supply of accounting information: Financial accounts form a crucial link in enabling providers of finance to monitor directors. Imperfections in the financial reporting process will cause imperfections in the effectiveness of corporate governance. This should, ideally, be corrected by the working of the external auditing process.

Executive pay

Increasing attention and regulation (as under the Swiss referendum "against corporate Rip-offs" of 2013) has been brought to executive pay levels since the financial crisis of 2007–2008. Research on the relationship between firm performance and executive compensation does not identify consistent and significant relationships between executives' remuneration and firm performance. Not all firms experience the same levels of agency conflict, and external and internal monitoring devices may be more effective for some than for others. Some researchers have found that the largest CEO performance incentives came from ownership of the firm's shares, while other researchers found that the relationship between share ownership and firm performance was dependent on the level of ownership. The results suggest that increases in ownership above 20% cause management to become more entrenched, and less interested in the welfare of their shareholders.

Some argue that firm performance is positively associated with share option plans and that these plans direct managers' energies and extend their decision horizons toward the long-term, rather than the short-term, performance of the company. However, that point of view came under substantial criticism circa in the wake of various security scandals including mutual fund timing episodes and, in particular, the backdating of option grants as documented by University of Iowa academic Erik Lie and reported by James Blander and Charles Forelle of the Wall Street Journal.

Even before the negative influence on public opinion caused by the 2006 backdating scandal, use of options faced various criticisms. A particularly forceful and long running argument concerned the interaction of executive options with corporate stock repurchase programs. Numerous authorities (including U.S. Federal Reserve Board economist Weisbenner) determined options may be employed in concert with stock buybacks in a
manner contrary to shareholder interests. These authors argued that, in part, corporate stock buybacks for U.S. Standard & Poors 500 companies surged to a $500 billion annual rate in late 2006 because of the impact of options. A compendium of academic works on the option/buyback issue is included in the study *Scandal* by author M. Gumport issued in 2006.

A combination of accounting changes and governance issues led options to become a less popular means of remuneration as 2006 progressed, and various alternative implementations of buybacks surfaced to challenge the dominance of "open market" cash buybacks as the preferred means of implementing a share repurchase plan.

**Separation of Chief Executive Officer and Chairman of the Board roles**

Shareholders elect a board of directors, who in turn hire a Chief Executive Officer (CEO) to lead management. The primary responsibility of the board relates to the selection and retention of the CEO. However, in many U.S. corporations the CEO and Chairman of the Board roles are held by the same person. This creates an inherent conflict of interest between management and the board.

Critics of combined roles argue the two roles should be separated to avoid the conflict of interest. Advocates argue that empirical studies do not indicate that separation of the roles improves stock market performance and that it should be up to shareholders to determine what corporate governance model is appropriate for the firm.

In 2004, 73.4% of U.S. companies had combined roles; this fell to 57.2% by May 2012. Many U.S. companies with combined roles have appointed a "Lead Director" to improve independence of the board from management. German and UK companies have generally split the roles in nearly 100% of listed companies. Empirical evidence does not indicate one model is superior to the other in terms of performance. However, one study indicated that poorly performing firms tend to remove separate CEO's more frequently than when the CEO/Chair roles are combined.
Claims Legal Aspects

It's hard to believe, but the last thing you might expect to happen is an insurance company denying your death benefits under a life insurance policy. Believe it or not, but this happens all the time and insurance companies, under certain situations, can and will deny a death benefit claim. In this article, we briefly explore the issues involved when an insurance company fails to make payment of proceeds of a claim. If you are a beneficiary under a policy, here are some things you should be aware of:

**Contestability:** The insurer has the right to deny payment under a claim during the "contestable" period. Stated simply, if the insured (the person who bought the policy) dies within less than 2 years after the policy was issued, the company can investigate the insured's responses on the application for insurance. Typically, the company will request to review the medical records of the insured. If the insurer discovers that the applicant misrepresented his or her medical condition, or omitted pertinent information, it can deny payment. The law allows insurance companies to take such action. Even if the denial occurs, however, it doesn't mean that the beneficiary doesn't have recourse. Certain arguments may be available to the beneficiary to counter the denial of the claim.

**Materiality:** In general, for a company to deny payment under a policy, the misrepresented or omitted fact must be material in nature. A particular fact is "material" if, had it been fully and correctly disclosed on the application, the insurer would have either denied coverage or provided coverage to the insured under different terms. Unfortunately for the beneficiary, it is not difficult to prove that the fact at issue was material.

**Knowledge and Belief:** To assess whether the applicant made a material omission or misrepresentation on the application, the lawyer for the beneficiary must examine the application itself. Many applications contain language which requires the insured to attest to his or her "knowledge and/or belief" that the information provided is accurate. Such language is critical because it may impose a tougher burden on the company to prove that a misrepresentation was made. For example, if the insured stated he did not see a doctor in the last 5 years, even though his medical records indicated otherwise, and his statement
was made honestly and not with an intention to deceive, arguably there is no misrepresentation.

**Disclosure of Information to the Agent:** In some situations, the insured might have disclosed information about his medical condition to the agent, and the agent failed to transmit that information on the application. In such case, the company may be legally charged with having knowledge of such information. For this reason, it is important to go over the application process carefully with your attorney. If your claim for life insurance proceeds has been denied; you may take the following steps to pursue your rights:

1) Contact an attorney who is familiar with insurance law.
2) ask the attorney if he charges on an hourly basis or contingency fee. If he or she charges hourly, find out the hourly rate.
3) Ask the attorney to provide you with a copy of the fee agreement.
4) ask the attorney whether your claim is viable and, if so, what arguments and defenses might be raised.
5) ask the attorney if he or she will try to settle your claim before litigation or if he or she will sue immediately.

**Legal Aspects of Insurance Contracts**

**Contract of indemnity**

- Indemnity means that the insured person is placed, financially, in the same position, as he was before the loss. The exceptions to the rule are found in Personal Accident Policies, Agreed Value policies in Marine Insurance and valuables and reinstatement policies like in Engineering policies. These are also contracts of indemnity but by a special application of the principle, the measure of indemnity is decided at the time of entering into the contract itself.

- **Good faith & Utmost good faith**

  Both the parties to a contract are expected to observe good faith. However, the good faith assumes utmost importance when Material Facts are concerned and therefore utmost good faith should be observed on matters relating to Material
facts. (A material fact is the information, which acts as a criterion for acceptance of insurance contract and the price at which to do so. The insurers, who issue the contract document, have the same duty to observe good faith while issuing the policy and should ensure that there is no ambiguity in the contract wording).

- **Insurable Interest**

Insurance contracts without insurable interests have no sanction of the law as they amount to speculation. The owner of a property has absolute insurance interest. When a person insures a property, what is insured therein, is his interest in that property. By this principle, insurance interest exists to other parties like lessor, lessee, financiers, etc., but their interest is limited to the extent of their financial commitment only. The insurable interest must exist both at the time of the proposal and at the time of claims. However, in the case of marine insurance contracts which are assignable without the consent of the insurers, insurable interest must exist at the time of loss only (Marine insurance contracts are governed by marine Insurance Act of 1963).

- **Existence of subject matter**

Existence of subject matter of insurance is necessary.

- **Legality of parties to contract**

At law, a minor cannot enter into a legal contract. However, so long as the contract is for the benefit of the minor himself, such contract is valid. Contracts entered with person of unsound mind or with a person from alien Country, are illegal.

- **Proximate cause**

A loss could be due to a cause of causes. In the chain reaction, it is the dominant cause, which would be the proximate cause to be considered for the purpose of a
claim. It is always the duty of the insured to prove that the loss arose out of the insured peril, which is proximate.

- **Consensus Ad Idem (of the same mind)**

  In Insurance contracts only one party - the proposer knows the details of the risk. He has a duty to disclose particularly, material facts and the same should be understood by the other party to the contract - the insurers. In other words, each party should understand what is proposed for insurance and the same should be covered by the insurance contract. As the insurers issue the contract document, any ambiguity in the contract wording will be read against the insurers as they have drafted the contract.

  These conditions are mainly framed to achieve the principle of indemnity and to ensure that the insured does not make any profit out of the loss.

The express conditions include

- **Contribution**

  Contribution condition is a corollary to the Principle of indemnity. If an insured obtains more than one policy covering the same risk, he cannot recover the same loss from more than one source so that he is not benefited by more than ‘Indemnity’. Contribution condition checks that each policy pays only a ratable portion under each separate policy.

- **Subrogation**

  Subrogation condition is another corollary to the principle of Indemnity. A loss may occur accidentally or by the action or negligence of third party (not workmen). The property owners have a right to proceed against the offending third party to recover the loss/damage and also under their insurance policy but not under both. If the insured opts to recover the loss under the insurance policy, which is faster and does not involve litigation, he will surrender his rights against
the third parties in favor of the Insurers signing a ‘Letter of subrogation’ on an appropriate stamp paper.

An exception to this is life insurance policies wherein insured/ beneficiaries can claim under an insurance policy and also precede against the offending third party. Subrogation is the legal right of one person, having indemnified the other in a contractual obligation to do so, to stand in the place of another and avail of all the rights and remedies of the another, whether enforced or not.

- **Arbitration**

When liability under the policy is admitted but the quantum is disputed, the insured cannot rush to a Court of law without first referring the dispute to Arbitration as per ‘Indian Arbitration and reconciliation Act -1996'. In keeping with the provisions of the Act, the insured may appoint an arbitrator to be followed by appointment of another arbitrator by the insurers. They can also appoint a single arbitrator, to represent both of them. If the two separate arbitrators cannot reach an agreement, both the arbitrators can appoint a third arbitrator called umpire. The award of the Arbitrators is binding on both the parties to the dispute and cannot be challenged unless a point of law is involved.

The jurisdiction of Arbitration proceedings is within Indian territory. However, when foreign funding is involved, the financiers who are also joined in the policy as co-insured, may insist upon conducting the Arbitration proceedings in their own country. In such a case, the insurers may agree to modify the arbitration condition suitably.

**Fire Prevention / Fire Protection**

It is essential that a property owner take adequate precautions to protect him from fire losses. It is always to be remembered that even insurance can compensate only for the material value of the loss suffered. But the damages caused by a fire can go far beyond material loss. The following would provide the reader with a preliminary list of measures
that can be taken to prevent fire incidences or if one arises, to protect against a major loss.

**In a Home:**

- Carelessness is the major causes of fires in residential premises and many a fire occurs because of carelessness in the kitchen. So:
  - do not forget to turn off the stove / oven once cooking is completed or if you are leaving home (even if it is only for a few minutes)
  - do not forget to turn off the electrical appliances - particularly the cooking appliances - which do not operate on self timer once use is over or if you are leaving home
  - do not overload electrical points

- Electrical short-circuiting is one of the major causes of fire anywhere in the world. This can happen due to overloading of electrical points or due to use of sub-standard material. In this connection
  - It is essential to ensure that the plugs fit into their sockets snugly and are not loose and moving within the sockets (e.g. the use of a two pin plug in a conventional three-pin socket)
  - It is advisable not to use multi-pin sockets as if they are not of good quality or if they are not properly manufactured arcing can result which may lead to fire.
  - Jointing of electrical wires should be avoided as far as possible. If it cannot be avoided then ensure that
    - the jointing of the two wires (the Phase and the Neutral leads) are jointed at different levels and not adjacent to each other
    - the joint should be properly taped with good quality insulation tape and the joint should be checked from time to time to ensure that the insulation tape is properly in place

- Cigarette smoking is not only injurious to health but can also cause fires. Leaving burning cigarette / cigarette butts (even in ashtrays) has lead to many fires. So if
one smokes in a house it should be ensured that the cigarette is properly put out. It is essential to check that the cigarette butts are put out before cleaning the ash trays into waste bins.

- It is advisable to have a Fire Extinguisher at home and the family members should be familiar about how to use it in case of an emergency.

- All family members should know emergency procedures in the event of a fire.

**In an Office**

- Electrical short-circuiting is one of the major causes of fire anywhere in the world. This can happen due to overloading of electrical points or due to use of sub-standard material. In this connection:
  - It is essential to ensure that the plugs fit into their sockets snugly and are not loose and moving within the sockets
  - It is advisable not to use multi-pin sockets because if they are not of good quality or if they are not properly manufactured arcing can result which may lead to fire
  - Jointing of electrical wires should be avoided as far as possible. If it cannot be avoided then ensure that
    - the jointing of the two wires (the positive and the negative leads) are jointed at different levels and not parallel to each other
    - the joint should be properly taped with insulation tape and the joint should be checked from time to time to ensure that the insulation tape is properly in place (some times the tape would come loose because of humidity and temperature)
- Cigarette smoking is not only injurious to health of the employees but can also cause fires. Leaving burning cigarette / cigarette butts (even in ash trays) has lead to many fires. So if one smokes in an office it should be ensured that the cigarette is properly put out.
• It is essential to check that the cigarette butts are put out before cleaning the ash trays into waste bins. The cleaning staff also must be made aware of the need for this precaution.

• Fire Extinguishers should be provided in adequate numbers at various parts of the office fixed in very visible and easily accessible positions and the staff members should be familiar about how to use them in case of an emergency.

• It is also essential to have the Fire Extinguishers maintained under a maintenance contract with a Fire Consultant of good repute. It is to be ensured that the Fire Extinguishers are serviced regularly and the date of last service should be recorded on the extinguisher.

• It is preferable to select office premises in buildings which are fitted with Fire alarm systems as it would alert the neighbors of a Fire emergency, if one arises, and external help can be summoned at short notice.

• All staff members should know the emergency procedures in the event of a fire

**In Factories and Warehouses**

• Electrical short-circuiting is one of the major causes of fire anywhere in the world. This can happen due to overloading of electrical points or due to use of sub-standard material. In this connection
  - It is essential to ensure that the plugs fit into their sockets snugly and are not loose and moving within the sockets
  - It is advisable not to use multi-pin sockets because if they are not of good quality or if they are not properly manufactured arcing can result which may lead to fire
  - Jointing of electrical wires should be avoided as far as possible. If it cannot be avoided then ensure that
    - the jointing of the two wires (the positive and the negative leads) are jointed at different levels and not parallel to each other
    - the joint should be properly taped with insulation tape and the joint should be checked from time to time to ensure that the insulation
tape is properly in place (some times the tape would come loose because of humidity and temperature)

- Cigarette smoking should NOT be allowed not only inside the premises but even within the compound and any employee found violating the rule should be strictly dealt with.
- Cooking should NOT be allowed within the premises
- It is necessary that the premises are fitted with Fire alarm systems as it would alert the neighbors of a Fire emergency, if one arises, and external help arrives at short notice.
- The premises should have adequate Fire hose reel with water supplied by a dedicated fire water supply system which would include one electrical pump and a standby diesel pump. It is advisable that the Fire water-pump room be fitted with a Automatic Sprinkler type of fire extinguisher.
- Fire Extinguishers should be provided in adequate numbers at various parts of the office fixed in very visible and easily accessible positions and all the staff members should be familiar about how to use them in case of an emergency. It is necessary that the Fire extinguishers provided are appropriate for the risk. The Fire consultant should be clearly told about how the premises will be used and the type of operations that would be carried on / materials that would be stored in the premises.
- It is essential to have the Fire Extinguishers and other Fire Fighting systems (Fire alarm system, Fire water pump, hose reels, hydrant points, sprinklers etc.) maintained under a maintenance contract with a Fire Consultant of good repute. It is to be ensured that the systems are regularly inspected and defects if any are rectified in time. Fire Extinguishers need to be serviced regularly and the date of last service should be recorded on the extinguisher.
- All staff members should know emergency procedures in the event of a fire.
- Civil Defense Certificate of approval should be obtained for the premises and should be valid at all times.
What to do in case of a Claim under the Fire Insurance Policy

- Naturally a claim under the policy would depend upon whether
  o the property lost or damaged is covered under the policy AND
  o the cause of such damage is covered under the policy

- In case a loss or damage happens which is caused by one or more of the insured perils then the Insurers need to be informed immediately. While advising the claim please ensure the following:
  a. The Policy number is quoted on the Loss advice.
  b. The date and time of loss is specified
  c. A brief summary of the loss incidence and the materials that are lost or damaged is specified
  d. The location of the premises where the loss has taken place is provided
  e. The phone number of the contact person who can assist the Insurers or a Loss Adjustor deputed by them to verify the damages

- In the event of a claim happening all efforts should be made to minimize loss. These may involve segregating damaged materials from the rest of the property, obtaining competitive quotes for any repairs / replacements that may be required etc. If any Third Party is responsible for the loss then they should be held specifically responsible for the loss / damage so that the rights of recovery are protected.

- At the earliest possible, a detailed estimate of loss / damage need to be prepared and provided to the Company / Loss Adjustor

- If the loss / damage involves repairs / replacement of damaged property the detailed estimate of loss / damage (mentioned above) should be supported by at least three quotations for such repairs / replacement, obtained from out-side sources.
Review Question:

Q1. Discuss Need of Fire Insurance and the purpose of fire insurance.
Q2. Describe Risk and classify the Risk.
Q3. What is the different types of hazardous goods?
Q4. What is the legal aspect of claim/
Q5. Types of Fire insurance
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