



## CHAPTER 3

### LITERATURE REVIEW

#### 3.1 Basic Concept of Work Accidents and Country Development

Yoosuk (1999: 8-10) mentions that the work injury problem in each country is different depending on its socio-economic environment. Work injury rates in developed countries are considered to be lower than those in developing and underdeveloped countries. Developed countries have long history of development and long experience of problem solving, population are well-educated, recognize the significance of self-protection and as well as adequate safety legislation and enforcement, good prevention measures, and improvement of working system for high efficiency. Underdeveloped countries mainly rely on agricultural production and use of less advanced technologies. Health problems in these countries are mainly communicable diseases. Some countries may, instead, have problem in agricultural sector. Most developing countries heading to industrialization are confronting several problems due to the adoption of new technology without assessment of their conditions. Furthermore, the low education level of labour forces and a large number of labour forces migrate from agricultural to industrial sectors without preparation for work stress conditions result in the health and psychosocial problems.

The ILO also has concluded that industrialized countries have a clear decrease in serious injuries as a result of structural changes in the nature of work, and improvements of workplace to be healthier and safer, including improved first aid and emergency care, which saves lives in the event of accidents. (ILO, 1999)

#### 3.2 Steps of Work Accidents

Heinrich, Peterson and Roos (1980: 22-23) presented a theory of accident causation called "Domino Theory". The authors address that a preventable accident is one of five sequential factors that result in injury. The injury is

invariably caused by an accident, and accident in turn is always the results of the factor that immediately precedes it. The factors in the accident-occurrence series are given in chronological order in the followings:

Order of Accident Factors	Explanation of Factors
1. Ancestry and social environment	<ul style="list-style-type: none"> <li>- Recklessness, stubbornness, avariciousness, and other undesirable traits of character.</li> <li>- Environment may develop undesirable traits of character or may interfere with education.</li> <li>- Both inheritance and environment cause faults of person.</li> </ul>
2. Fault of person	<ul style="list-style-type: none"> <li>- Inherited or acquired faults of person, such as recklessness, violent temper, nervousness, excitability, inconsiderateness, ignorance of safe practice, etc., constitute proximate reasons for committing unsafe act or for the existence of mechanical or physical hazard.</li> </ul>
3. Unsafe act and/or mechanical or physical hazard	<ul style="list-style-type: none"> <li>- Unsafe performance of persons, such as, standing under suspended loads, starting machinery without warning, horseplay, and removal of safeguard.</li> <li>- Machinery or physical hazards, such as unguarded gears, unguarded point of operation, absence of rail guards, and insufficient light.</li> </ul>
4. Accident	<ul style="list-style-type: none"> <li>- Events, such as falls of person, striking of persons by flying objects, etc., are typical accidents that cause injury.</li> </ul>
5. Injury	<ul style="list-style-type: none"> <li>- Fractures, lacerations, etc., are injuries that are directly resulted from accidents.</li> </ul>

Heinrich's domino theory was the most widely adopted theory. Many industrial safety inspection and investigation systems are built on the domino

theory. The theory has been updated leading to management model of causation. (Heinrich et al., 1980)

### 3. 3 Work Accidents: Causes and Related Factors

In 1975, Zabetakis (cited in Heinrich et al., 1980: 32-35) proposed that basic causes of accident could be grouped into three interrelated categories:

- a) *Management Safety Policy and Decisions*: includes items such as management's intent (relating to safety); production and safety goals; staffing procedures; assignment of responsibility and authority, and accountability; employee selection, training, placement, direction and supervision; communications procedures; inspection procedures; equipment, supplies, and facilities design, purchase and maintenance; standard and emergency job procedures; and housekeeping.
- b) *Personal Factors*: includes motivation; ability; knowledge; training; safety awareness; assignment; performance; physical and mental state; reaction time; and personal care.
- c) *Environmental Factors*: includes temperature; pressure; humidity; dust; gases; vapors; air currents; noise; illumination; nature of surroundings (slippery surfaces, obstructions, inadequate supports, hazardous objects).

Chanthawatchai (n.d) analyzes that workers' unsafe acts, private sector management, and public sector administration can cause work injuries.

- a) Workers' unsafe acts: are caused by a lack of knowledge, recognition, and attitude toward safety practices.
- b) Private sector management: might be impaired by no recognition or attitude toward safety at the management level.
- c) Public sector administration: gives rise to problems of limitation in staff and budget, law enforcement, and information system.

Another study on occupational health and safety personnel's opinions on causes of occupational health and safety problems was conducted in 1995. At the level of workers, the study revealed that most of respondents think that workers do not pay attention to or have low recognition in safety, as well as lack of

knowledge. At the level of management, it is found that the absence of recognition, clear safety policy, and budget support are the major problems. In legal aspect, low level of law enforcement and insufficient safety inspection are the major problems. (Pensirinapa and Suthanmasa, n.d.)

### **3.4 Studies on Work Accidents and Related Factors in Thailand**

The Ministry of Interior, Department of Labour (1988) concluded that work injuries during 1983-1985 had an average rate of 37.7 per 1,000 workers covered by WCF. The highest rate was found in workplaces with 100 – 499 workers, and most of the injuries occurred in manufacturing industry. In 1986, work accident cases were decreased, and the majority of these accidents still occurred in the manufacturing industry, followed by the construction industry. The injury rate in workplaces with 100 - 499 workers was the highest, followed by workplaces with 500-999 workers. The report also addressed the related factors of the work injury cases, indicating that 71.0% of injured workers completed the highest education merely at the primary school level.

Setthapongkul (1996) reported that in 1988, work injury rate in Bangkok's surrounding vicinity had an average of 7.2% which was considered the highest rate, followed by 3.9% in the Southern region, and 3.4% in Bangkok. The study also indicated that the construction and manufacturing industries accounted for the largest number of injured workers. Medium-scaled workplaces (200 - 499 workers) had the highest injury rate. This study also revealed that male workers were the majority of injured cases (78.6), and young workers with age of less than 20 years were prone to get injured due to less experience and safety awareness.

MOLSW (1995) presented that the work injury rate in Thailand during 1988-1993 had increased at an average of 41 per 1,000 workers with the fatality rate of 25 per 100,000 workers. However, this paper mentioned that only a small portion of injuries was reported because about 90% of the workplaces were not covered by WCF. Small-scaled workplaces with less than 10 workers, and employees in the agricultural sector, civil services and state enterprises, were not

covered by WCF. Therefore, the paper estimated that the actual figures of work injuries would be far higher than the reported ones.

Another study of accident in Thailand (Santikan, 1999) reported that since the enactment and enforcement of the Workmen's Compensation Act in 1974, work injury rate increased from 11.8 to 44.1 per 1,000 workers in 1995, with the highest rate of 46.6 per 1,000 workers in 1993. Considering the severity, the rates of fatality and total disability cases decreased from 33.84 and 1.7 per 100,000 workers in 1982 to 19.17 and 0.35 per 100,000 workers in 1995. Based on the statistics in the year 1995, the construction industry had the highest work injury rate of 13.2%, followed by the textile industry. The authors also mention that apart from WCF, another source of data was the Injury Surveillance System, reported to the Epidemiology Division, MOPH. However, the number of cases reported to this system was only 5,742 cases, which was far less than 216,166 cases reported to WCF in the year 1995.

### **3.5 Legislation on Occupational Safety and Health in Thailand**

National Executive Council Announcement No.103, issued in 1972, is the basic law of labour protection. It empowers the Ministry of Interior (MOI) to regulate safety and health measures and appoint labour officers to enforce them. It also covered general labour protection issues, such as working hours, holidays, and sick leave, wage rate, overtime payment, including female and child workers protection. Moreover, the Announcement prescribes that WCF is formed under the Social Security Office (SSO) to take care of victims of industrial injuries. (ILO, 1992)

The legislation on occupational safety and health in Thailand can be divided, according to the objectives, into 5 categories: (Thanachaisethawoot, 2001: 42-43)

#### **3.5.1 Legislation aimed directly at workers' safety and health**

There are 15 notifications on different specific issues as follows:

- Notification on safety in working with machinery (1976)

- Notification on work safety in respect of environmental conditions (Heat, Lighting, Noise) (1976)
- Notification on work safety in respect of environment conditions (Chemicals) (1977)
- Notification on safety in connection with electricity (1979)
- Notification on work safety in respect of environmental conditions (Diving) (1980)
- Notification on safety in construction work relating to temporary lifts for carrying materials (1981)
- Notification on safety in construction work relating to scaffolding (1982)
- Notification on safety in construction work governing construction areas (1985)
- Notification on work safety relating to cranes or derricks (1987)
- Notification on work safety relating to pile driving (1988)
- Notification on work safety in confined spaces (1990)
- Notification on work safety relating to dangerous chemicals (1991)
- Notification on work safety with boilers (1992)
- Notification on work safety relating to falls, falling objects (1992)
- Notification on work safety relating to fire prevention (1992)

3.5.2 Legislation aimed at promotion of more proper and effective safety measures for employees is the notification on occupational safety of employees (1997). This notification stipulates that employers should appoint occupational safety officers at managerial and supervisory level. Furthermore, workplaces with less than 50 workers should appoint a basic occupational safety officer and those with 50 or more workers should appoint professional occupational safety officers. (Mori and Pantucharoensri, 2000)

3.5.3 Legislation aimed at promotion of employees' participation in safety measures is the notification on occupational safety committee (1995). This notification stipulates that a workplace with 50 or more workers must set up a committee on occupational safety, health and working

environment. The committee consists of employer representative, and employee representatives. (Mori and Pantucharoensri, 2000)

3.5.4 Legislation aimed at empowering and authorizing the labour inspection officers is incorporated in Chapter 8 of the Labour Protection Act (1998), Sections 100 – 107 and Sections 139-142.

3.5.5 Legislation aimed at employees' security in case of injury or illness includes the following laws:

- Social Security Act (1990)
- Workmen's Compensation Act (1994)

### **3.6 WCF and Payment Criteria**

According to National Executive Council Announcement No.103, dated 16 March 1972, WCF is set up to assume the liability of employers when employees are injured, sick, disabled, or die from work. WCF covers only workplaces with 10 or more workers. WCF does not cover for workers who are temporary or seasonal in the agricultural sector, private school teachers, and government officers, state enterprise employees, non-profit organization staffs. At the initial stage, WCF covered only some provinces, which had a number of industrial factories. WCF has extended its area coverage to all provinces since 1987.

In pursuance of the Workmen's Compensation Act, 1994 and ministerial regulations and notifications issued under the Act, the WCF payment criteria for injured workers are as follows: (Social Security Office [SSO] and Workmen's Compensation Fund [WCF], 2001)

#### **3.6.1 Medical treatment costs**

Medical treatment costs will be paid as necessarily and actually incurred, up to 35,000 baht. In some cases that require special type of

treatments, additional payment will be covered as actually incurred, up to 50,000 baht according to the applicable regulations.

### 3.6.2 Rehabilitation costs

Rehabilitation costs will be paid as necessarily and actually incurred, subject to the fixed rates and rules as follows:

- Medical and occupational rehabilitation costs are covered up to and not exceeding 20,000 baht;
- Operations for rehabilitation costs are covered up to 20,000 baht.

### 3.6.3 Compensation

This benefit is payable only after the third day of incapacitation. The monthly compensation payment is equal to 60% of monthly wage with a minimum rate of 2,000 baht, and a maximum rate of 9,000 baht per month. The compensation benefit will be paid according to the regulations as follows:

- a) For temporary disability, monthly compensation will be paid for the whole period of incapacitation, but not longer than 1 year.
- b) For permanent partial disability (loss of part of body), monthly compensation will be paid up to a maximum period of 10 years depending on which part of the body is lost.

Examples of compensation payments for permanent partial disability:

One arm loss (above the elbow)	10 years
One hand loss (above the wrist)	9 years
One leg loss (above the knee)	6 years 8 months
One foot loss (above the ankle)	4 years 8 months
Two feet loss	10 years
One eye loss	4 years 5 months
One ear hearing loss	2 years 8 months

- c) For permanent total disability, monthly compensation will be paid up to a maximum period of 15 years.



- d) For the death or Disappearance, monthly compensation will be paid to the heir for 8 years.

#### 3.6.4 *Funeral grant*

A lump sum funeral grant will be given up to 100 times the highest minimum daily wage.

### 3.7 Losses due to Work Accidents

Boonyahotra (1987: 21-23) divided losses due to accidents into two components as follows:

- i. *Direct loss*: such as fees for emergency service; medical treatment; rehabilitation, compensation for temporary disability; permanent disability and death, cremation, and damaged property.
- ii. *Indirect loss*: such as the time loss for first aid of the injured, time loss for investigating the cause of accident, loss due to damaged machinery and property, opportunity loss from death and disability to earn future income.

Furthermore, all accidents cause suffering to the victims, anguish to their families - especially those workers injured to death or permanent disability - may give rise to disastrous effects on the livelihood of their families.

Heinrich et al. mentioned that employers' hidden or indirect costs due to work accidents indisputably reflect the need for accident prevention as an essential element of sound business management. The authors presented the list of hidden accident costs as follows: (Heinrich, et al., 1980: 82-83)

- (1) Cost of the lost time of the injured employee;
- (2) Cost of time lost by other employees who stop work;
  - a. Out of curiosity;
  - b. Out of sympathy;
  - c. Assisting the injured employee;
  - d. Other reasons;

- (3) Cost of time lost by foremen, supervisors, or other executives as follows:
  - a. Assisting the injured employee;
  - b. Investigating the cause of the accident;
  - c. Arranging for the injured employee's production to be resumed by another employee;
  - d. Selecting, training, or bringing in a new employee to replace the injured employee;
  - e. Preparing a report on the accident to the authority, or attending to a hearing before the authority;
- (4) Cost of time spent by first-aid attendant and hospital staffs, when medical treatment is not covered by the insurance carrier;
- (5) Cost due to damage to the machinery, tools, or other property, or to spoilage of material;
- (6) Incidental cost due to interrupted production, failure to fill orders on time, loss of bonuses, payment of forfeits, and other similar causes;
- (7) Cost to employer under employee welfare and benefit systems;
- (8) Cost to employer to continue payment of wages of the injured worker in full, after his or her return to work - even though the service of the employee (who is not yet fully recovered) may, for some time, be worth only half of normal value;
- (9) Cost due to the loss of profit on the injured worker's productivity and on idle machines;
- (10) Cost incurred as a consequence of tension or damaged morale due to the original accident;
- (11) Overhead cost in respect of the injured employee - expenses for lighting, heat, rent and such items, which continue while the injured employee is unable to work;

Heinrich et al. (1980) illustrated that according to the original research on the accident cost in 1926, the indirect cost was estimated to be as much as 4 times the actual costs. However, the authors mentioned that the study was based on only a few factors. In fact, the omission of calculations for spectacular accident that resulted in huge hidden cost, fortifies the main argument. Circumstances

might not prevail again, but other similar to them are likely to arise with considerably frequency.

Boonyahotra considered that the direct loss is tiny as compared to the indirect loss, similar to the tip of the iceberg. The author also referred to a study in Brazil, which revealed that the direct loss accounts for only 6% of total loss. (De Codes, 1979 cited in Boonyahotra, 1987)

Another study conducted by forestry firms in Finland categorized costs to these companies into three groups as follows: (Klen and Tapio, 1989)

- (a) *Primary direct costs*: include the cost of transporting the injured workers to hospital and medical costs and wage compensation paid by insurance
- (b) *Secondary direct costs*: include wages paid while workers are disabled
- (c) *Indirect costs*: include the costs relating to processing accident compensation forms, investigating the causes of the accidents, paying home visits to the injured workers, disrupted performance of other workers, administrative overhead in main office, damaged equipment, and interest corresponding to the time compensation is actually made. The study revealed that indirect costs incurred by these firms are relatively low, since work was performed separately by several small teams, and equipment losses were infrequent. Moreover, accidents resulting fatalities and permanent disability were not examined. Nevertheless, nearly three-fifths of the total economic loss sustained by the firms are indirect.

### **3.8 Methods to Measure the Value of Life**

#### **3.8.1 Human Capital Approach**

To measure the benefit or cost of any medical intervention, it is necessary to measure the value of human life. The most common method used to determine the monetary worth of life is the "Human Capital Approach." This approach essentially equates the value of life to the market value of the output produced by individuals during their life expectancy. The technique involves an estimation of the discount value of future earning capacity resulting from an

improvement in or an extension of life expectancy. The Human Capital Approach is the most widely accepted method for determining the value of life. However, a shortcoming is that this method cannot control labour market imperfection, and it fails to consider any non-market returns individuals might receive from other activities, such as leisure. It also does not take into account the value of pain and suffering sustained from the injuries and medical treatment, nor does this method consider the value of enjoyment in life of individuals. (Santerre, 2000)

### 3.8.2 Willingness-To-Pay Approach

An alternative approach used to measure the value of life is the “Willingness-To-Pay Approach.” This approach is based on how much money people are willing to pay to reduce health risks. The advantage of this approach is that it estimate the total value to life and not just the job market value. The resultant value of life generated by this approach includes the value of forgone earnings, plus the non-market value received from life and good health. As the result, the Willingness-To-Pay Approach generally estimates the value of life higher than that generated by the Human Capital Approach. The major drawback of this approach lies in gathering reliable data concerning the amount people are willing to pay for increment reduction of health risks. (Santerre, 2000)

## **3.9 Economic Evaluation Techniques for Loss**

### 3.9.1 Medical Treatment Costs

In case that medical treatment costs cannot be directly obtained, Boonyahotra (1987) presented that most hospitals have average costs of both outpatient visits and inpatient-day for injury and some diseases. Medical treatment costs can be calculated from the number of minor injury cases multiplied by an average cost of treatment per visit. The major injury treatment costs can be calculated from the number of major injury cases

multiplied by an average length of stay (LOS) and an average cost per inpatient-day.

*Minor medical treatment costs*

$$= \text{no. of minor injury} * \text{unit cost of OPD visit}$$

*Major medical treatment costs*

$$= \text{no. of major injury} * \text{unit cost of inpatient-day} * \text{average LOS}$$

A study on economic loss of road accidents calculates the loss on medical treatment by using the total number of injuries multiplied by the current average cost per incident. (Tosutho, 1998) While another study on economic loss due to road accidents in 1993 estimated that medical treatment costs amounted to 2,250 million baht for inpatients and 135 million baht for outpatients. However, no details of such estimation of the loss are available in that study. (Pattamasiriwat, 1994)

### 3.9.2 Workers' Opportunity Loss from Temporary Disability

A study on productivity loss from industrial accidents conducted in Samut Prakan in 1989 reported that the average of workday lost of 7,086 injured workers unable to work for longer than 3 days was 15.58, and that of those who absent from work for not more than 3 days was 1.5 days. The author also revealed that those workers who suffer from permanent total disability and permanent partial disability spent on average 40 workdays for medical and rehabilitation treatments. The productivity loss due to temporary disability was calculated by using the number of injuries in each group multiplied by the average workday lost of each group and the average wage per day. (Boonsothornsathit, 1990)

*Productivity loss*

$$= \text{no. of injury} * \text{average workday lost} * \text{average wage per day}$$

Another study on productivity loss from work accident in the Northern Industrial Estate in 1997 analyzed the cases of WCF claimants in Lampoon. The study revealed that the average workday lost of 68 cases of workers with temporary disability for longer than 3 days was 13.54 days, and that of those 552 cases unable to work for not more than 3 days was 1.5 days. (Chutaroj, 1998)

### 3.9.3 Loss from Permanent Partial Disability

Boonyahotra (1987: 28) presented The American Medical Association's standard workday charged due to injury as follows:

Table 3.1: Standard workday charged due to injury by characteristics and organ loss

Characteristics of partial disability or organ loss	Percentage of loss in working capability	Estimated workday charged (days)
Death	100	6000
Total permanent disability	100	6000
Eye - 1 eye	30	1800
- 2 eyes	100	6000
Ear - 1 ear/hearing loss	10	600
- 2 ears/hearing loss	50	3000
Hand loss	54	3240
Finger - 1 knuckle	7	420
- 2 knuckles	11	660
- 3 knuckle	14	840
Arm loss - up to the elbow	57	3420
- up to the shoulder	60	3600
Ankle loss	28	1680
Toe - 1 knuckle	0	-
- 2 knuckle	0	-
- 3 knuckle	1	60

Characteristics of partial disability or organ loss	Percentage of loss in working capability	Estimated workday charged (days)
Big toe - 1 knuckle	4	240
- 2 knuckles	5	300
Leg - up to the knee	36	2160
- up to the hip	40	2400

According to WCF report, there are not many details in characteristic of those permanent partial disabilities; only the injured parts of body are reported. based on a study on work injury in Samut Prakan, primary data of compensation payment was analyzed to obtain workdays charged of 807 permanent partial disability cases. The average workday payment under the compensation criteria was also taken into consideration to obtain the percentage of loss. After that, the resulting percentage of loss was used to calculate workdays charged based on The American Medical Association's standards. The study revealed that the average of workdays charged was 385.75 days. (Boonsothornsathit, 1990)

$$\text{Productivity loss} = \text{no. of injuries} * (385.75) * \text{average wage per day}$$

Based on another study of the Northern Region Industrial Estate, the author revealed that the average of workday charged of 6 permanent partial disability cases was 295.2 days. (Chutaroj, 1998)

### 3.9.4 Loss from premature death

#### 3.9.4.1 *Working year loss*

To estimate the opportunity loss from premature death, it is necessary to convert the death to working year loss. Working year loss is the expected remaining working years of the the injured workers to the retirement. (Boonyahotra, 1987)

*Working year loss at age i* = number of death at age  $i$  \* (60-  $i$ )

*Total working year loss* =  $\sum$  *Working year loss at age I*

Some studies apply the age of 60 as the retirement age to calculate working year loss due to premature death. (Sumiratana, 1996; Wongsaroj, 1997; Tosutho, 1998; Promklum, 1998; Kaiyawong, 1999) However, some concepts considered that the working age might not end at the age of 60. The author introduced a working-life table to estimate the remaining working years for specific age groups. The working life table is crucial to get insight in mechanism and consequences of changing of labour force, for instance, estimation of the whole life earning capacity, estimation of the necessity of labour force substitution in industry, economic assessment in changes of labour force participation rate and population structure. (Mahidol University, 1981 cited in Chutaroj, 1998).

The studies created the working life table from life table and labour force participation rate. Then, the working year loss was calculated based on the working life table. In Boonsothornsathit (1990), it was found that the workers' working lifetime is longer than the normal retirement age of 60. While Chutaroj (1998) found that the working lifetime is almost equal to the age of 60.

#### 3.9.4.2 *Earning loss*

Estimating the working year loss to earning loss is to multiply the earning capacity figure or average wage or per capita income with the total working year loss. However, normally, wage or salary increases every year according to the improved knowledge and skills of workers.

Future income = current income\*(1+g)<sup>n</sup>



While  $g$  = income growth rate

$n$  = number of years from the year of death

Discount rate ( $r$ ) will be applied in order to estimate the present value of future income.

*Earning loss at age  $i$*

$$= \frac{\sum \text{no. of death at age } i * \text{average income} * (1+g)^n}{(1+r)^n}$$

There are some studies using this technique to estimate earning loss from premature death. (Wongsaroj, 1997; Promklum, 1998) However, some studies applied forecasting techniques to obtain future income based on time-series data of per capita GDP or non-agricultural GPP instead of directly applying the income growth rate. (Komnamul, 1979; Chutaroj, 1998; Boonsothornsathit, 1990)

The discount rates applied in previous studies varied. The study on economic loss due toroad accidents estimated the value of loss from 11,000 premature deaths in 1993, applying 5% discount rate, resulting in the economic loss of 52,308.0 million bath. (Pattamasiriwat, 1994) Some studies applied 1-year interest rate as the discount rate. (Boonsothornsathit, 1990; Kaiyawong, 1999)

#### 3.9.4.3 *Loss from permanent total disability*

There are two different concepts in calculating earning loss due to permanent total disables. The first concept applies the same technique as that of the premature death, by calculating the working year loss before calculating the earning loss. (Boonsothornsathit, 1990)

The other concept applied The American Medical Association's standard working day loss that estimates 6,000 workday loss due to permanent total disability. (Tosutho, 1998)

### *3.9.4.3 Opportunity loss for family members in taking care of injured workers*

In Thai society where family members take care of the patient during illness, some studies take the estimation of opportunity loss for family members into consideration. A study on costs incurred by road accident patients who were admitted in 3 general hospitals in Bangkok in 1995 indicated that patients have an average length of stay (LOS) of  $16.2 \pm 16.5$  days, with the median of 11 days. The study reported that patients are taken care of by their family members during admission, and the average number of days spent by family members was  $17.1 \pm 26.0$  days. (Sumiratana, 1996) Another study on economic loss from road accidents estimated the opportunity loss sustained by family members, by using the ratio of 1:1 (Tosutho, 1998)

#### *Value of loss*

= no. of injuries \* average workday loss \* average income