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# Korean OSH Legal, Institutional and Organizational Systems and It's Implication to Vietnam

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漢城大學校 安全保健經營大學院

産業保健工學科

産業衛生工學專攻

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Nguyen Anh Tho의 産業衛生工學碩士學位論文을 認准함

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# I. Purpose, Method and Scope

## 1. Purpose of Research

It is very useful for Vietnam to review the Korean status of occupational accidents, working conditions, OSH management activities since recently Vietnam has shown rapid economic development, which is similar to the experience of Korea's economic development for last few decades.

By reviewing the situation and causes of occupational accidents, working conditions and occupational safety and health (OSH) management activities of Korea, it is possible to evaluate the processes or systems that affected the decrease of the industrial accidents and occupational injuries during the industrialization of Korea. This study was conducted to review and analyze the Korea's experiences for OSH systems, to find implications and to make an application to Vietnam.

## 2. Research Methodology

A hypothesis of this study is that many features of Vietnam would be similar to those of Korea. To prove the hypothesis, the industrial economic structure and industrialization progress of Vietnam and Korea will be introduced briefly here, and then the same features of the two countries will be refined.

It is possible that some OSH problems occurred in Korea in the past also may be occurred in Vietnam because many features of Vietnam would be the same as those of Korea during the industrialization periods. So the measures implemented in Korea to solve the OSH problems can be apply to Vietnam in next coming

time. In this thesis also introduces summarily (about) the Korea and Vietnam's geographic, population, education, and reviews and analyses of the situations of occupational accidents, diseases and health effects of workers and industrial safety and health management activities during the industrialization periods of Korea and Vietnam, then evaluates the achievements and limitations and compares the similarities and differences between the two countries.

Based on the results of evaluation and comparison, and circumstance of Vietnam, the Thesis suggests the exchanges on ensure the safety and health for workers and puts forward some measure to improve the prevention activities in Vietnam and implications to Vietnam.

Chapter I is the introduction with the purpose, method and scope of this study. At the chapter II, there are some indicators that represent the industrial safety and health status of Korea. Chapter III reviews the situations of OSH activities of Vietnam, and chapter IV evaluates and compares the OSH activities of Vietnam with those of Korea.

This study is based on some reports, papers, statistics, and surveys issued by OSH agencies and concerned organizations of Vietnam and Korea.

## 3. Scope of research

The industrialization in Korea started in the middle of 1960s, then in the end of 1990s has become the developed country. The industrialization and modernization process of Vietnam has been proceeded since 1986. The Strategy of Socio-Economic Development to 2010 with target is creating foundation for Vietnam becoming an industrialized economy in the year 2020 toward a modern one.

Consequently, this Thesis has chosen to reviews, evaluates and compares the documents and data of economic development, industrial structure, industrialization and OSH activities from 1970s to 2002 in Korea and from 1990s to 2003 in Vietnam and the quantitative targets to 2010 and 2020 in Vietnam. Besides, the Thesis has used some data out of period above to illustrate for evaluation on Korea and Vietnam.

# Ⅱ. Industrial safety and health in Korea

## 1. National Introduction

### 1.1 Geography and social characteristics

The Republic of korea occupies the southern half of the Korean peninsula in north-eastern Asia. The geography of South Korea is characterized by rugged and often mountains terrain. Two-thirds of South Korea's land area is covered in forest. Korea has distinct four seasons. Spring and fall are very mild and comfortable. Winter bring cold, dry winds from Siberia, which keep very low temperatures. The warm and very humid winds blow from the Pacific, which bring heavy rains and hot weather in summer. Temperatures gidder widely from region to region within Korea, with the average being between 60 °F and 160 °F. The average temperature in August, the hottest period of the year, ranges from 190 °F to 270 °F, while in January, the coldest month, temperatures range from -80 °F to 70 °F.

The population is crowded into the few lowland areas. As the end of 2002, Korea's total population was estimated at 47,640,000 with 479 people per square kilometer. South Korea is very densely populated and highly urbanized. More than three quarters of the population live in urban areas, 21% of the population live in Seoul. Korea saw its population grow by an annual rate of 3 percent during the 1960s, but growth slowed to 2 percent over the next decade. In 2002, the growth rate was 0.63%, the crude birth rate was 10.3 per 1000 persons, and the total fertility rate was 1.17 per women. The life expectancy of South Koreans is estimated to be 76.5 year; 72.8 year for males and 80 year for females. The leading causes of death include cancer (25.8%) and circulatory diseases

(25.0%). The prevalence of tuberculosis (1.3%) and pneumonia(1.1%), common in the population through the 1970s, is remarkably reduced in more recent years. The infant mortality rate was 6.2 per 1000 infant in 1999.

All Koreans speak and write the same language. The literacy rate of South Korean is 99%. Children receive nice years compulsory education. Nearly all (99%) Middle School students advance to High School, and 74.2% of High School students advance to higher level education, such as college.

## 2. Economic - labor characteristics

### 2.1 Economic development

Korea, once known to be one of the world's poorest agrarian societies, has undertaken economic development in earnest since 1962. In less than four decades, it achieved what has become known as the "economic miracle on the Han River". As a result, from 1962 to 2002, Korean Gross National Income(GNI) increased from US $ 2.3 Billion to US $ 477billion. With average growth rate is 8,2% on period from 1960 to 1995. The Asian financial crisis of 1997-99 exposed longstanding weaknesses in South Korea's development model, including high debt/equity ratios, massive foreign borrowing, and an undisciplined financial sector. Growth plunged to a negative 6.9% in 1998, then strongly recovered to 9.5% in 1999 and 8.5% in 2000. Growth fell back to 3.3% in 2001 because of the slowing global economy, falling exports, and the perception that much-needed corporate and financial reforms had stalled. Led by consumer spending and exports, growth in 2002 was an impressive 7.0%, despite anemic global growth. The nation became the 29th member country of the Organization for Economic Cooperation and Development (OECD) in 1996.

Korea's First Five Year Economic Development Plan (1962-1966) focused on laying a foundation for industrialization. The plan successfully initiated, and then accelerated, a structural adjustment of the nation's industrial structure from subsistence agriculture to modern manufacturing and export trade. Korea has carried out comprehensive industrialization. The share of primary industries in overall industrial structure decreased steadily from 31.5 percent in 1970, to 15.7 percent in 1980, and further to 5 percent in 2002. On the other hand, the share of manufacturing industries increased from 14.7 percent in 1970, to 36.0 percent in 2002. The share of the service industries stood at 47.5 percent in 2002.

Korea's economic growth was initially led by labor-intensive light industries, especially textiles. The light industries were steadily replaced by the heavy and chemical industries in 1970s that have come to account for over half of nation's total manufacturing output. Korea also produces a wide range of industrial machinery and equipment. The nation's shipbuilding and auto manufacturing industries have reached their peak, while its electronics industry is the leading growth sector. To meet ever -increasing fuel demand, large petrochemical complexes, supported by several large refineries, have been developed along the coast of the country. The other principal industries are cement, food processing, polywood, chemical fertilizers, footwear, clothing, ceramics, glass, nonferrous metals and farm implements. Construction-related investment has grown with government support through infrastructure expansion projects, such as railways, roadways, marine ports and airports facilities. The Government led investment is combined with private sector demand for construction of new housing, office building and factories.

## 2.2 Labor characteristics

The Table 1 show the general trends in working age population, economic active population and Participation rates since 1963. The working age population was a mere 14.6 million in 1963, then exceeded 20 million in 1974 and 30 million in 1989. As of 2002, the number stands strong at 37 million. The economically active population expanded from 8.23 million in 1963 to 22.9 million in 2002. The participation rates were on the rise in tune with the rapid industrialization and urbanization of period from 1963~1978. From 1978~1984, the rates declined due to industrial saturation and increasing interest in education, during 1985-1997 the rates climbed once again until blocked by the devastating economic failure. From 1998~2002, the rates started gaining again thanks to the economic recovery.

Table 1. Working age population, Economic Active Population and Participation Rates: 1963~2002 (Unit:1000 persons)

| Year | 1963 | 1970 | 1980 | 1990 | 1995 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Working age population | 14,551 | 17,468 | 24,463 | 30,887 | 33,659 | 36,186 | 36,579 | 36,963 |
| Economic Active Population | 8,230 | 10,062 | 14,431 | 18,539 | 20,845 | 22,069 | 22,417 | 22,877 |
| Labor Force Participation Rates (%) | 56.6 | 57.6 | 59.0 | 60.0 | 61.9 | 61.0 | 61.3 | 61.9 |

*Source: Labor supply- Ahn, Joyup, Labor in Korea 1987~2002.*

The employment structure of Korea has undergone a noticeable transformation since the drawn of industrialization in early 1960s. In 1960, workers engaged in the agricultural, forestry and fishery sectors accounted for 63% of total labor force. However, this figure dropped to a mere 9.7% by 2002. By contrast, the weight of the tertiary industry (service sectors) has gone up from 28.3% of total labor force in 1960 to 71.2% in 2002.

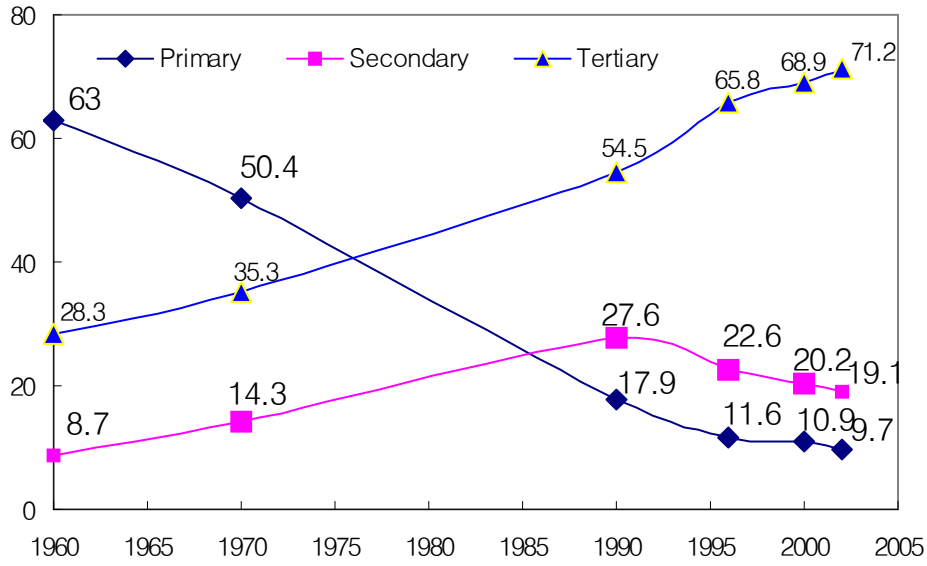


Figure 1. Composition of Labor Force by Industry[1].

*Source: Fact About Korea-2002.*

The proportion of large scaled enterprises employing more than 300 workers is quite small, 2,188 enterprises or 0.09% of all establishments. These establishments employ 1,605,461 workers or 14,7% of employed South Korea workers. In contrast, the proportion of small-scaled enterprises, which employ less than 50 workers, is 98.1% of all establishments. These establishments employ approximately 7,058,561 workers or 64,6% of all employed South Koreans Ministry of Labor of Korean (2003) Yearbook of labor statistics. Seoul. Change in labor market are closely correlated with the human resource composition of companies. Human resources within firms have shown a raid rise in the age of workers as well as a rapid rise in the education level of workers from 1982 to 2002. Mean age and tenure have increased from 29.6 years and 3.1 years

1) The term "Primary"refers to the agricultural, forestry, fishery and hunting sectors; "Secondary" the mining and manufacturing sectors; and "Tertiary" social overhead capital and the service sectors.

in 1982, respectively, to 36.7 years and 6.0 years in 2002. The percentage of worker aged 20 years or less than 40 or above were 57.9% and 17.9%, respectively, in 1982 but had increased to 29.6% and 36.8%, respectively, in 2002. The ratio of workers with a junior-college education or higher increased sharply from 13.6% in 1982 to 43.7% in 2002.

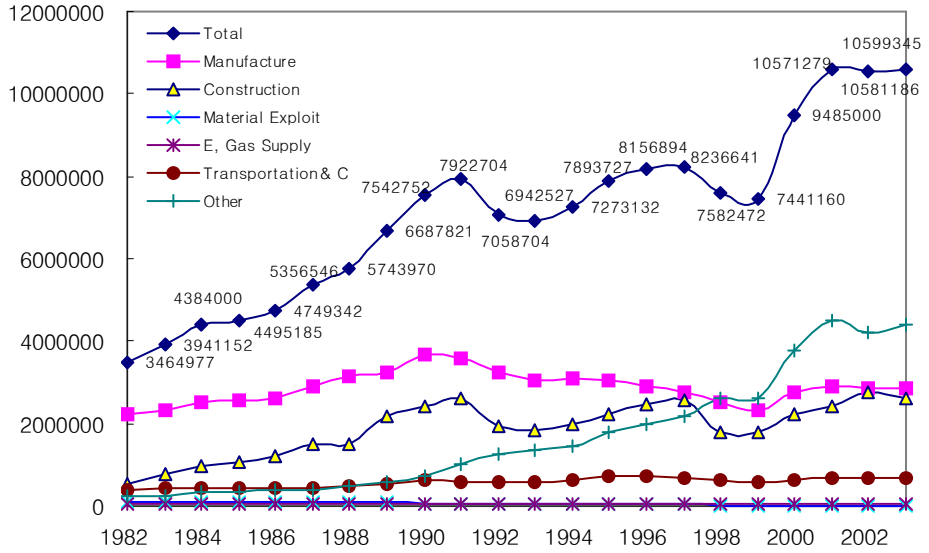


Figure 2. The Trends of number of Insured Workers by kind of industry.

*Source: Labor in Korea 1987~2002.*

Number of insured workers was a mere 81,000 in 1963, until 1973 was 1,319,000 workers. The number of insured workers was steadily rising to 3,752 thousands in 1980, then fall down in period 1980~1982. The Number started gained again from 1983 with 3,941 thousands workers to 1991 with 7,922 thousands workers. From 1991~1993, the number declined, during 1993~1997 the number increased to 8,236 thousands workers, then declined during 1997 to 1999 caused by economic crisis. From 2000, the number climbed to 9,485 thousands by changing the policy on Industrial Accident Compensation Insurance, and in 2002 with 10,599 thousands workers.

The main composition of the number of insured workers were the manufactures and construction. During 1982 to 1993, the proportion of manufactures and construction was more than 70%, especially, on period of 1985~1990, the proportion is higher than 80%. During 1993~2002, the proportion was always more than 50%. However, in which the proportion of manufactures gradually decreased from 65% in 1982 to 26% in 2003. The proportion of construction increased during period of 1982~1991, from 15% in 1982 to 30% in 1991, then declined from 1992 to 2003, except the period of 1995~1998. The proportion of other industries and services, including the trades, finances, health and cultural services increased from 6% in 1982 to 40% in 2003 (see Figure 2).

South Korean workers perform 24.0 day of work, 200.4 hours of work per month. The average monthly wage was 1,532,750 Korean won. The Gross National Income (GNI) per capital was 10,013 US dollars (in 2002).

## 3. Legal system

### 3.1 Introduction of OSH legal system

The Industrial Safety and Health Act originated in the Labor Standards Act. The Labor Standard Act promulgated on May 10, 1953 stated specific standards for machines, tools, facilities and working environments and 10 legal provisions on safety and health including those requiring employers to assign safety and health managers.

As Korea began to spur economic development in the 1960s, industrial accidents occurred in increasingly large numbers. However, concentrating all of its administrative capacity on economic development at that time, the government could not put enough efforts into implementing industrial accident prevention policy. The Government enacted the occupational health management rules in 1961 and the occupational safety management rules in 1962, thereby laying the groundwork for the implementation of industrial safety and health policy at workplace.

In the 1980s when industrialization gained more speed, and machines and facilities became large, the likelihood of large -scale accidents occurring at workplace grew sharply, necessitating the establishment of industrial accident prevention measures. Accordingly, on December 31, 1981, the Industrial Safety and Health Act which exclusively deals with industrial safety and health was enacted, laying the groundwork for the full implementation of industrial accident prevention policy. It applies all workers including public sector employees, and extends protection or benefits to workers not covered by the Industrial Accident Compensation Insurance.

There are some other legislation related to occupational safety

and health, and social security. In 1984, the Pneumoconiosis Special Act for miners was passed to deal with miners'health issues. The Employment Insurance System was enacted in 1995 to secure a systematize device for dealing with imbalances between the supply and demand for workforce and strengthening vocational training. All workplaces with one worker or more, whether they are regular, temporary or hourly workers, are subject to the Employment Insurance System since 1998. The Medical Insurance Act was passed in 1977. All citizens became eligible for medical service under this law in 1988. The National Pension to secure incomes for old age was introduced in 1988.

In the early 1990s, to respond to changes in working environment and worker's needs, systematic and comprehensive policies such as the first six-year industrial accident prevention plan (1991-1996) and the occupational disease prevention program (1991) were established and implemented for the first time. Also, to raise safety awareness in society, ten million signature campaign for accident-free workplaces and safety culture campaign were conducted. In 1995, a special project for industrial accident prevention to support the improvements of safety facilities in small and middle companies was carried out. In addition, to reduce the level of industrial accident frequency to that of advanced countries, the Planing Body for industrial Safety Advancement was organized in 1996 and a three-year plan (1997-1999) for industrial safety advancement was established an implemented.

### 3.2 The major OSH regulations

The major OSH regulation have been described in some current legal document, of which the main are Industrial Safety and Health Act, Enforcement Degree of Industrial Safety and Health Act, Act on the Prevent of Pneumoconiosis and Protection etc, of Pneumoconiosis worker and Industrial Accident Compensation Insurance Act.

#### 3.2.1 Responsibilities of Employer

- The employer shall observe the standards for preventing the industrial accidents and furnish to employees the information on the safety and health of the workplace and safeguard the lives and maintain and promote the safety and health of employees by creating proper working environment through the improvement of working conditions, and comply with the industrial accident preventive policy executed by the state; Employers shall observe the standards when designs, manufactures or imports machinery, facilities and the other equipment, who manufactures or imports raw materials, designs or constructs any construction, and strive for preventing the occurrence of industrial accidents caused by use of such things (Article 5, ISH Act)

- The employer shall assign a person in charge of safety and health management, safety manager, health manager, supervisor, occupational physician and establish and operate an industrial safety and health committee composed of an equal number of workers and employers (Article 13~19, ISH Act);

- Employer shall keep workers informed of the major content of OSH regulation. Posting or keeping them at all times at workplace; shall install or attach safety and health marks for warning hazardous or dangerous facilities and places in the workplace, guiding measures at the time of emergency, and raising

safety consciousness (Article 11,12 ISH Act)

- The employer shall conduct periodically the education on the safety and health for the employees in his business place shall carry out health examination for protecting and maintaining the health of the employees shall take the monitor and evaluate the work environment of workplaces, where hazardous work to the workers'health (Article 42, ISH Act) shall record the causes, etc of the accident and disease when it occurs (Article 10-2, ISH Act)

- The employer shall pay the premium for employees who suffer from occupational accidents and diseases (Article 65, Industrial Accident Compensation Insurance Act);

- Employer shall not dismiss any worker during a period of temporary interruption of work for medical treatment of an occupational injury or disease (Article 30, Labor Standard Act)

### 3.2.2 Responsibilities of Workers

- Employees shall observe the standards for preventing industrial accidents, and are subject to measures for preventing industrial accidents, which are taken by the employer or other related organizations Employees shall observe the measures taken by the employer (Article 6, 25 ISH Act)

- If any employee interrupts the work and takes a shelter due to any urgent risk to occur any industrial accident, he shall report it without delay to the immediate superior officer, who shall take a proper measure for it (Article 26, ISH Act).

### 3.2.3 Requirement for Safety and Health

1) General requirement

- The employers shall conduct the self-inspection periodically on machines and instruments and shall attend the self-inspection if representative of workers requested. The employer of a workplace with hazardous or dangerous equipment, shall prepare and submit a process safety report to the Minister of Labor and keep it in workplace.(Article 49-2, ISH Act); For hazardous or dangerous work, the employer shall not allow any person other than those who have the qualification, licence, experience or skill required for the work, to perform such work

- Minister of Labor may order a employer to formulate and execute a safety and health improvement plan on workplace, facilities and other matters. (Article 55, ISH Act)

- No person shall manufacture, import, transfer, offer or use substance, which proven to cause occupational cancers and identified as especially hazardous to workers' health, likely to cause significant health problems to workers based on the results of risk assessment. Except to obtain in advance permission from the Ministry of Labor. Equipment for manufacturing, using, dismantling or removing that substances and working methods and other standards for permission shall be determined by the Minister of Labor and maintain the equipment in conformity with the standards (Article 37, 38-ISH Act).

- The Minister of Labor should classify the chemical substances and physical factors, etc causing the employees health, determine the exposure criteria, assess the risk of the hazardous agents to workers' health. Any employer who manufacture or import new chemical substance shall submit to Minister of Labor a hazard and risk evaluation report, to prevent any health problems of workers caused by the chemical. If it is deemed necessary for preventing the health impairment of employees, the Minister of

Labor may order the employer to take measures, such as installation or maintenance of facilities and equipment or keeping of protective equipment. When employers supplies or provides new chemical, he/she shall also give document containing all the measures that need to be taken to prevent workers' health problem. If an employer desires to manufacture, import, use, transport or store any chemical substance or preparations containing chemical substance shall prepare in advance the Material Safety Data Sheets, and put up and keep them at any place to be seen easily by employees. the employer shall take proper measures, such as attaching a warning sign on the container or cover of the substance of preparations conducting any education for employees, etc. If the chemical substance or preparations containing chemical substance are transferred or supplied, the Material Safety Data Sheets shall be given together with them (Article 39~41-ISH Act).

- A person who desires to manufacture or import the personal protective equipment and necessary for certain jobs performed by workers shall undergo a test on PPEs (Article 35-ISH Act).

- If violating the OSH Act and regulations at workplace, any worker may report it to Minister of Labor or labor inspector(Article 52-ISH Act).

2) Safety requirement

- The employer shall take measures necessary for preventing the hazards caused by machines, equipment or other facilities; by explosive, combustible or inflammable substance; and by electricity, heat or other energy. The employer shall take measures necessary for preventing hazards caused by an improper work method in the excavating, quarrying, stevedore, timbering, transporting, operating, dismantling, heavy weight handling and other works. The employer shall take measures necessary for preventing hazards at places where employees might fall down, send, structure, etc. might be collapsed, material objects might fail or come flying, or it might be

anticipated to occur any hazard in the course of carrying out a work due to natural disaster and terrestrial upheaval(Article 23-ISH Act).

- The machine and instrument required for a harmful or dangerous work or operated by the electric power, shall not be transferred, leased, installed, used, or exhibited for the purpose of transfer or lease without taking any protective measures for preventing the harmfulness and hazards. Any person who lends or borrows machines, instruments, equipment, building, etc to or from another person, shall take measures necessary for preventing any harmfulness and hazards. Any person who manufactures or imports protective devices necessary for the protective measures shall under go a performance test on such protective devices and indicate or publicize it. No person who manufactures or imports machines, instruments and equipment, shall manufacture or import those in unconformity with the manufacturing and safety criteria Any person using machines, instruments, equipment, etc. as referred to periodical inspection (Article 33-ISH Act);

- The Minister of Labor can certify the safety on machines, equipments, their parts, protection devices and personal protective equipment which meet the safety and health standards (Article 34-2-ISH Act);

3) Health requirement

- The employer shall take measures necessary for preventing the Health impairment caused by raw material, gas, steam, dust, fume, mist, oxygen lacked air, disease germ, etc; Health troubles caused by radiation, harmful rays, high temperature, low temperature, ultrasonic waves, noises, vibration, abnormal atmosphere pressure, etc.;by gas, liquid or remnants, etc. discharged from the workplace; by monitoring of gauges, operation of computer terminals, precision works, etc,. and Health impairment caused by simple repetitive work or over-burdened work for body: Health troubles caused by failure to maintain the proper standards of ventilation, lighting, illumination, thermal insulation, damp proofing, cleaning, etc(Article 24-ISH Act).

- Employer shall have the person holding qualification or entrusting to institution (designated by Ministry of Labor) to monitor and evaluate the work environment of workplaces, where hazardous work to the worker'health two times a year; at workplaces, where have the toxic substances shall take one a month, and then record and keep the results and report them to Ministry of Labor. Employer shall inform workers at the particular workplace about the result of work environment monitoring (Article 42- ISH Act).

- The employers shall conduct health examination for workers one time a year, if it is deemed necessary, the Minister o Labor may order the employer to conduct a tentative health examination for specific workers or other necessary matters. If the workers do not want to receive health examinations from the doctor, dentist or health examination institution designated by the employer, they may receive equivalent health examinations from other examination institutions. Base on the results of health examination, for maintaining the health of workers, employer shall move the workplace, change the work, shorten the working hours, conduct a work environment monitoring, install or improve facilities and

equipment, or take other proper measures; the Minister of Labor may order to conduct an occupational disease investigation for diagnosis occupational diseases and identify the cause of disease or the prevention of occupational disease(Article 43-ISH Act).

### 3.3 Development of safety & health standards

Technical standards on safety and health are essential to acquire safety and health at workplaces. In January 1990, technical guidelines, working environment standards and provisions related to the operation of the General Technical Standard Committee were added to the Occupational Safety and Health Law. The Committee is placed under the control of KOSHA.

The Technical Standard Committee is composed of 8 Technical Committees -General safety, Electrical safety, Mechanical safety, Chemical safety, Construction safety, General health, Occupational medicine and Occupational hygiene committees, and a General Standard Committee, which finalize the draft for standards. Each Committee is composed of maximum 20 members of experts from employees' and employers' representatives, government authorities, KOSHA, industries and academia.

Standards that must be complied with among those determined by the Technical Standard Committee are submitted to the Ministry of Labor for public announcement in the name of the Labor Minister. Other items are classified into KOSHA code and announced by the President of KOSHA for the use in industries. Currently, there are 29 standards announced by the Ministry of Labor, and 229 KOSHA codes. To improve the quality of KOSHA code, KOSHA revises its codes every 5 years to reflect technological developments. Since international standards tend to be more adopted as domestic standards, KOSHA uses international

standards as references when developing its codes.

## 4. OSH Administration system

In 1979, the Government organization responsible for industrial safety and health was expanded and reshuffled by establishing the Labor Standards Bureau in the Labor Administration and appointing a director of industrial safety and health division in each local labor office. In 1992, the Industrial Safety Bureau was established under the Ministry of Labor, from 1998 it became the Industrial Safety and Health Bureau.

In 1987, industrial safety divisions dedicated to industrial safety and health were established in local labor offices, and the Korea Industrial Safety and Health Agency was organized for the purpose of providing technical service to workplace. The KOSHA established as a non-profit organization. The mission of this agency supports research and development, the dissemination industrial accident prevention technology, and service in the forms of guidance and training, making industrial accident prevention structure systematic.

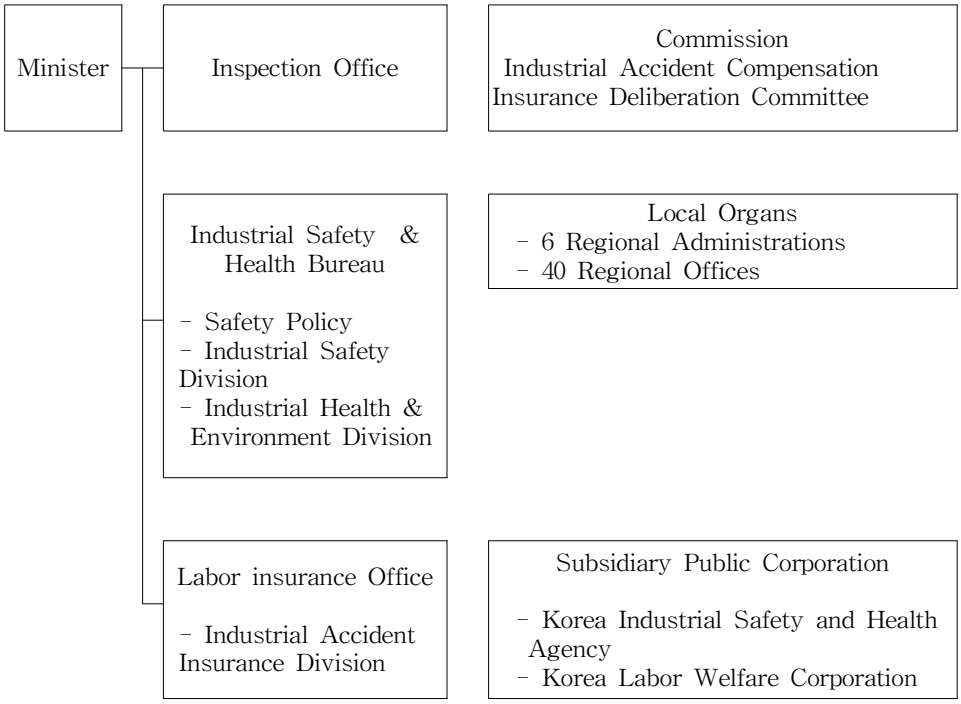


Figure 3. OSH administration system chart of the Ministry of Labor.

All in all, the basic framework was completed to develop and execute industrial safety and health policies in the 1990s. However, the manpower for inspection and guidance on OSH was striking insufficiency. In 2004, there were only 325 OSH inspectors and officers, so a OSH officer would be in charge of 32,225 employees or 3,197 enterprises the total of insured employees and enterprises are 10,473,000 persons and 1,039,000 enterprises. OSH inspectors has inspected an average of 5% of total enterprises a year, this means that Korea needs 20 years to inspect all enterprises one time.

### * Industrial Safety and Health Societies and related societies

The Korean Association of Preventive Medicine (KAPM) has played a key role in occupational health since being established in 1962. The KAPM concentrated on three different fields, epidemiology, health management, and occupational and environmental health. Until the early 1980s, in Korea, most physicians working in occupational health had a background of preventive medicine, and was mostly working for the Special Health Examination under the ISH Act.

In 1988, occupational physicians left the KAPM and established a new society to exchange knowledge and information on occupational health. These physicians formed a new professional organization, the Korean Society of occupational and environmental Medicine (KSOEM). Most members of KSOEM consisted of professors of universities, company doctors, and physicians who are involved in periodic Special Health Examinations.

The Korean Society of Occupational and Environment Hygienist (KSOEH) was established in 1990. The mission of KSOEH is to improve the knowledge and experience of industrial hygienists and to protect workers'health. The members of the KSOEH consist of professors of universities, industrial hygienists working at companies as occupational health managers and those working at occupational health service agencies.

The Korean Academic Society of Occupational Health Nursing (KASOHN) was established in 1990. The mission of KASOHN is to improve knowledge and experience of nurses gor occupational health. To achieve its goals, the KASOHN performs academic activities and educates its members.

## 5. Occupational Safety and Health activities

### 5.1 Research activities of OSH

With the process towards industrialization in the 1970s through the promotion of the chemical and heavy industry, the occurrence of serious industrial accidents and occupational diseases emerged as a social problem, drawing more attention to the issue of industrial safety and health. In the midst of this, the National Labor Science Research Center affiliated to Ministry of Labor was established in 1977 as a subsidiary institution of the then Labor Administration to carry out research and development and providing training in industrial safety and health. Under the Korea Occupational Safety and Health Agency Act which was promulgated on 1987, the Industrial Safety and Health Research Institute was established In 1989 for enhancement of safety and health at work for workers by implementing research and development efficiently on prevention techniques of occupational accidents and diseases. In Korea, research activities on occupational safety and health was implemented by OSH research institutes, universities and hospital and some other related agencies.

A total of 520 papers were published from 1950 to 1992. Only eight papers were published in 1950s; 83 papers were published in 1960s; 177 published in 1970s and 173 in 1980s. The social issues impacting occupational health during these decades have directly affected the research topics. Noise-inducing hearing loss and pneumoconiosis were not so many industries other than mines and textile industries. They remain as important topics, and predominate as occupational diseases detected by health examination.

Table 2. Number of papers in occupational health in Korea

| Topic | 1950s | 1960s | 1970s | 1980s | 1992 | Total |
|---|---|---|---|---|---|---|
| Physical | 6 | 32 | 37 | 19 | 7 | 101 |
| Pneumoconiosis | 0 | 15 | 25 | 16 | 10 | 66 |
| Chemical | 0 | 9 | 35 | 64 | 41 | 149 |
| Musculoskeletal | - | - | - | 5 | 6 | 11 |
| Clinical issues | 1 | 8 | 23 | 29 | 5 | 66 |
| Work physiology | 1 | 7 | 16 | 10 | 3 | 37 |
| OH management | | 6 | 19 | 13 | 5 | 43 |
| Work environment | 0 | 3 | 12 | 8 | 1 | 24 |
| Health promotion | | 3 | 10 | 9 | 1 | 23 |
| Total | 8 | 83 | 177 | 173 | 79 | 520 |

Toxicological research involving lead and mercury poisoning was driven by many cases of lead poisoning and mercury poisoning prevalent in 1980s. From 1961 to 1992, 64 papers of related to lead toxicity were published. The outbreak of carbon disulfide poisoning in the late 1980s and early 1990 brought many research related to organic solvents and heavy metals.

There were 592 papers from 1989 to 2003. Epidemiologic research were 56% (334 papers) of all papers. Most of epidemiologic research were cross-sectional studies. Experimental studies were 14% (84 papers). Chemical hazard-related articles represented 41.6% (246 papers) of published papers, following by occupational health management with 14.0%(83 papers) and musculoskeletal diseases with 11.0%(65 papers). Research on noise-induced hearing loss and pneumoconiosis accounted for 25 and 18 papers, respectively. Articles on lead, mercury and manganese were not published until late 1990s, a time period when Parkinson syndrome in welders was an important issue in occupational health. Research on organic solvents was subject of 28 papers, while topics on toluene, carbon disulfide, trichloroethylene, dimethylformamide, and styrene were a focus in 11, 9, 7, 6 and 6 papers, respectively.

Papers related to the musculoskeletal diseases have increased dramatically, from 8 papers in 1989-1993 time period to 33 papers in 1999-2003. 17 articles on job stress were published in 1994-1998, 25 from 1999-2003, and only 3 article during 1989-1993 (Table 3). The proportion of research papers involving musculoskeletal, job stress, health promotion and physical agents has increased, and deceases number of papers on pneumoconiosis, chemical and occupational health management. This shift in publication fairly represents the situation of occupational health in Korea. Chemical poisoning by carbon disulfide, lead, cadmium and organic solvents were the main issues in the South Korea's occupational health community in early 1990s. Rapid increases in compensation cases for the cardio-cerebro vascular diseases in the mid 1990s brought many research papers related to job stress, which was believed to be one of aggravating factors of cardio-cerebro vascular diseases. Many cases of musculoskeletal diseases have filed for compensation in the late 1990s, which consequently triggered research on musculoskeletal disease and ergonomic.

Table 3. Changes of research topics published in the KJOEM in 1989~2003

| Topic | 1989-1993 | 1994-1998 | 1999-2003 | Total |
|---|---|---|---|---|
| | Number(%) | Number(%) | Number(%) | Number(%) |
| Physical agent | 7 (5.4) | 13 (5.7) | 24 (10.3) | 44 (7.4) |
| Pneumoconiosis | 16 (12.3) | 24 (10.4) | 15 (6.5) | 55 (9.3) |
| Chemical | 62 (47.7) | 104 (45.2) | 80 (34.5) | 246 (41.6) |
| Clinical issue | 5 (3.9) | 5 (2.2) | 13 (5.6) | 23 (3.9) |
| Musculoskeletal | 8 (6.2) | 24 (10.4) | 33 (14.2) | 65 (11.0) |
| Stress related | 3 (2.3) | 17 (7.4) | 23 (9.9) | 43 (7.3) |
| O.H Management | 23 (17.7) | 31 (13.5) | 29 (12.5) | 83 (14.0) |
| Health promotion | 6 (4.6) | 12 (5.2) | 15 (6.5) | 33 (5.6) |
| Total | 130 (22.0) | 230 (38.9) | 232 (39.2) | 592 (100) |

The South Korean occupational health community has witnessed improvements in most workplaces. Traditional bad working condition are rarely seen today, with the exception of small-scale industry where less than 5 workers are employed. However, occupational cancer and other diseases caused by chronic and long -term exposures have been continuously found. Occupational respiratory problems, especially work -related asthma, seem to be one of the emerging issues in South Korea, because many chemicals known to be allergen are still widely used. Work-related health problem like stress, musculoskeletal disease, psychological and psychiatric problems still attract the interest of researchers. Researches on work organization and employment are important areas for future research.

## 5.2 OSH training, education activities

### 5.2.1 OSH education activities

The department of preventive medicine, mechanical engineering in many universities has traditionally taught students and conducted

research on OSH. After separating from department of preventive medicine since 1988, the department of occupational medicine in 17 universities has played a key role in occupational health research. The department of occupational medicine, mechanical engineering in many universities remains active in OSH through research, training physicians and educating OSH graduate students.

The Institute of Occupational Health involves the Work Environment Measurement and the periodic Health Examination by the ISH Act. Training Physicians for occupational medicine within the department of occupational medicine is accomplished during a 4-years program, with 21 months clinical medicine and 27 month occupational medicine. In 2003, there were 29 training hospitals and institutes, with 44 resident physicians. Writing a scientific paper is a requirement of the course of training to resident physicians.

Since 1980, the certificate of Industrial Hygienist is conferred upon individual who passes an examination for issues related work environment. Those who have at least 2 years of college-level education are eligible to apply the examination. Most industrial hygienists have diverse educational backgrounds in science disciplines such as chemistry, physics, biology and engineering. Some industrial hygienist hold master or doctoral degrees. There are several universities and graduate school in Korea where a course of study in industrial hygiene is offered. These Academic programs are active in research on occupational safety and health.

Presently, more than 2000 nurses are employed at workplaces, providing services as occupational nurses. A special degree or credential program has not been established for occupational nurses. The opportunity for short -term education is only offered to nursing professionals after they have enrolled in occupational health. The KASOHN is about to establish a system for the certification of

occupational health nurses who will be qualified after 2 years of training for licensed nurses.

### 5.2.2 OSH Training activities

Serious safety accidents occur every year in Korea, indicating a lack of safety awareness in all areas of society. Approximately 28% of all accidents occur due to the lack of training indicating that overall safety awareness is extremely lacking in the society. According to the OSH Act, employer shall conduct periodically education on safety and health for the workers; conduct education on safety and health related to the work when employs workers, changes the contents of work; conduct the special education on safety and health related to work when employs the workers for a hazardous or dangerous job. Employer may entrusting it to an education institution designated by the Minister of Labor. Minister of Labor shall be conduct the education on safety and health for the employers, supervisor and person responsible for safety and health, safety and health manager, safety manager, health manager, occupational physician, the person from safety and health management service institutions, specialized institution.

In 1987, the Occupational Safety and Health Training Institute has established under the KOSHA, have responsible for conduct the education on safety and health for employer and person responsible for safety and health. From the first course in 1988 to 2003, has trained for about 194,000 person(see Figure 3). The terms of education on safety and health including the Occupational Safety and Health Foundation, OSH management, Industrial Hygiene, Machines and Electric Safety, Fire and Explosive prevention, Safety of Construction, Health Promotion and Ergonomic and Work Design.

In order to promote safety awareness and support

self-regulatory safety and health management, KOSHA operates user-oriented training programs that concentrate on reducing the causes of industrial accidents by education. In nearby years, KOSHA conducted 2000 to 5000 safety and health seminars for managements to establish self-regulatory safety management activities. It support to have management be aware of the importance of safety and to build a self-regulatory safety and health foundation at workplaces by providing training program with the managements of leading risky industrial sectors with less than 50 employees.

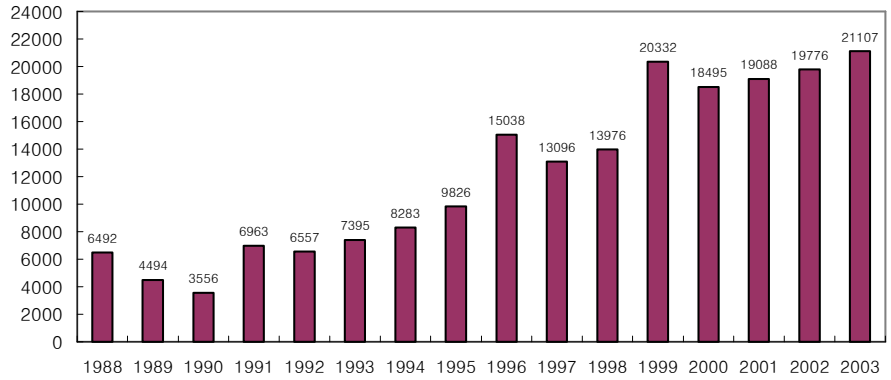


Figure 5. Number of employer and person responsible for safety and health has educated at Occupational Safety and Health Training Institute.

*Source: Korea Occupational Safety and Health Agency.*

KOSHA provides practice-centered special training and correspondence courses for safety and health managers and supervisors of construction sites and manufacturing plants. It conducts in service training to enable safety and health managers to effectively perform fieldwork. In particular, KOSHA operates a correspondence course by mail to reduce the working hour loss and economic burden of sending personnel for group training during working hours. In 2001, KOSHA started Cyber training programs

through the Internet.

KOSHA provides free on-the-job training for construction safety to help employees recognize the work-related risks and the necessity of complying with safety regulations by allowing them to physically experience injuries sustained by falling objects and falls. This involves 4 hours of experiments and practical training on 20 subjects for the construction employees and supervisors. It includes the use of the safety belts, fall-prevention nets, and safety helmets. The Virtual Safety Training Center is an advanced training facility where viewers can use computer based virtual reality technology to tour the workplace in an industrial site where harmful and dangerous work (press operation, transporting and work with risks of falling, etc.) is being performed and discover the risk elements through real-time 3D images. Also, viewers can experience hazards and the process of accidents at plants or construction sites through a computergraphic 3D video.

KOSHA operates mobile safety training buses equipped with audiovisual equipment and materials for employees at manufacturing and construction sites that cannot provide their own safety training due to the lack of space and instructors for the safety and health training. The mobile safety training bus visits each workplace to conduct on-site training.

To effectively prevent accidents, it is important to have students and infants systematically form a safety consciousness and develop safe habits. As part of the early safety training program, the Safety Culture Movement Headquarters in KOSHA conducts free of charge 2 day training courses for 16 hours for the teachers of kindergarten and primary schools, and the students' parents to foster safety culture instructors having qualifications and moral influence. It also promotes children's safety awareness by supplying

safety training materials and animated presentations that are appropriate for kindergarten and elementary schools.

## 5.3 Major industrial accident prevention Projects of the KOSHA

Since 1987, KOSHA has implemented several key industrial accident prevention projects, they are as follows: Enforced Technical Support Programs for Small-Scaled Workplaces Vulnerable to Industrial Accidents, Support Programs for Establishing Voluntary Safety Management in Workplaces, Safety Securing Programs for Harmful and Dangerous Facilities, Prevention Programs for Repetitive Industrial accident Such as Falls and Cave-Ins, Programs for Working Environment Improvement and Prevention of Occupational Diseases, Programs for Research and Development for Safety and Health and International Cooperation, Programs for Safety Awareness Education and Safety Culture Campaign. There are some main activities, as follows:

### 5.3.1 Certification of Occupational Safety and Health Management System (KOSHA 18001)

The Occupational Safety and Health Management System means a system under which an employer reflects safety and health policies in corporate management policies and establishes detailed execution guidelines and regulations for all employees to follow. In addition, the management periodically self-evaluates the results of the management plan to ensure its continuous improvement. In order to effectively distribute such an occupational safety and health management system, KOSHA in July 1999 started implementing the KOSHA 18001 certification system for all workplaces. The safety and health management system under the KOSHA 18001 program consists of workplace analysis, establishment of policies on safety

and health management and objectives, establishment and implementation of the safety and health management system, evaluation of the results and self-inspection, and manager examination. Each workplace voluntarily determines the detailed method of applying and implementing each component element by considering the size of the workplace, management environment and objectives, and the existence of potential hazards. At the end of 2002, there were 188 workplaces that received such certificates.

### 5.3.2 "S" mark safety certification

The "S" mark safety certification system was introduced in November 1997. The purpose of this system is to comprehensively evaluate product safety and reliability, and the manufacturers' quality control system in order to help machine and tool makers design and produce safe products, and prevent industrial accidents by enabling manufacturers to distribute safe products. Safety certification is required mainly for industrial machinery; however, it is applicable to all items ranging from simple machines such as safety devices, protective gear, and parts including industrial machinery to the advanced semiconductor manufacturing equipment.

The criteria of "S" mark safety certification are divided into essential certification standards (safety certification regulations, etc.), common certification standards (hydraulic and pneumatic safety standards, design and installation standards for safety guards, etc.), and product-specific standards (injection molding machine safety standards, etc.), which are governed by international standards, i.e. ISO and IEC and European Norm (EN). When the "S" mark safety certification system was introduced, many domestic enterprises showed interest in the system. Starting in 2000, however, manufacturers from foreign countries, such as Japan, U.S., and Britain, applied for the "S" mark. The number of foreign applicants

and consultations has increased, and up to now KOSHA has received 303 applications from 92 foreign enterprises

### 5.3.3 Accident Prevention at Construction Sites

The government recently sought a construction business activation policy with construction projects centered on Social Overhead Capital projects, and the construction of apartments and small projects in the Metropolitan areas. Such increased construction orders inevitably induced the hiring of foreign, elderly, female, and unskilled persons, which led to increased accidents. Coupled with the government's deregulation policies, employers' desire to invest in safety has decreased and the construction accident rate has recently risen. To effectively prevent accidents at construction sites, KOSHA is launching a wide variety of accident prevention programs according to the scale and type of projects, locality, and risk characteristics.

1) Technical support for large construction sites: KOSHA examines and inspects "Harmfulness and hazard prevention plans" submitted by construction companies as part of its efforts to preliminarily secure workplace safety. For construction projects of a specified scale, KOSHA conducts safety inspections based on the harmfulness and hazard prevention plan submitted by the contractors. KOSHA has focused its examination on the appropriateness of the safety and health programs in reducing or eliminating hazardous working environments. At the same time, KOSHA makes an ongoing effort to prevent accident that might occur during work by periodically inspecting the workplaces to verify that the submitted safety plans have actually been implemented. There are 6 Social Overhead Capital (S.O.C.) construction projects- subways, high-speed railways, express highways, power stations, dams, and ports with a high accident

rate, including collapses. KOSHA manages these construction projects differently according to their accident rate and safety grade, and provide technical assistance in cooperation with the Ministry of Labor.

2) Technical support for medium-sized construction sites: Compared with big-sized construction sites, the medium sized construction sites where overall construction cost is less than 10 billion won or US$8.3 million generally lack safety awareness and self-regulatory management capabilities. KOSHA assists the uninformed inspections with the Ministry of Labor at medium-sized construction sites to point out potential accident factors and present the technological improvement programs. KOSHA conducts accident prevention activities to discover and remove hazardous factors from sites with the potential for cave-ins, collapse of supports and form works, flooding, electric shock, and fire during thawing, rainy season, winter.

3) Technical support for small sized construction sites with many accidents: There are many small sized construction sites where employees' safety awareness and safety technology levels are relatively low even though many accidents occur. KOSHA provides ongoing technical support to improve safety levels of related officials. To acquire fundamental safety and improve safety facilities, KOSHA distributed personal protective equipment and provided other technical assistance to those construction sites lacking safety consciousness.

## 6. Industrial accidents and diseases

### 6.1 Industrial accidents

In Korea, the cases where an injured worker is unable to work for less than 4 days including the day of the accident are not covered by the IACI nor included in the industrial accident

statistics. As is show in Figure 4, the number of industrial accident victims has been decreasing for the last 15 years with the exception of a few recent years. The drop was even more pronounced during the economic downturn of 1998. But the numbers started picking up again as during 1999-2003 as employment rates rose in line with economic recovery and higher operation rates in the manufacturing sector. The manufacturing sector is generally acknowledged to be very prone to industrial accidents.

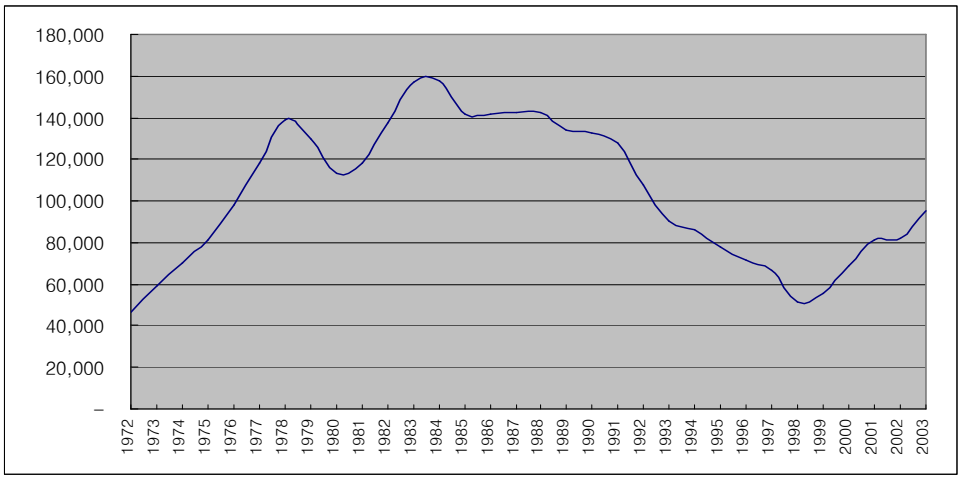


Figure 6. Number of Industrial Accident Victims.
*Source: Labor in Korea 1987 ~ 2002.*

The number of deaths caused by industrial accidents grew steadily until the economic recession abruptly reversed the trend in 1998.But Figure 6 shows that the number started climbing again in the following year as the economy began to recover. Deaths by industrial accidents are particularly common in industries with high occupational risk such as the construction and manufacturing sectors.

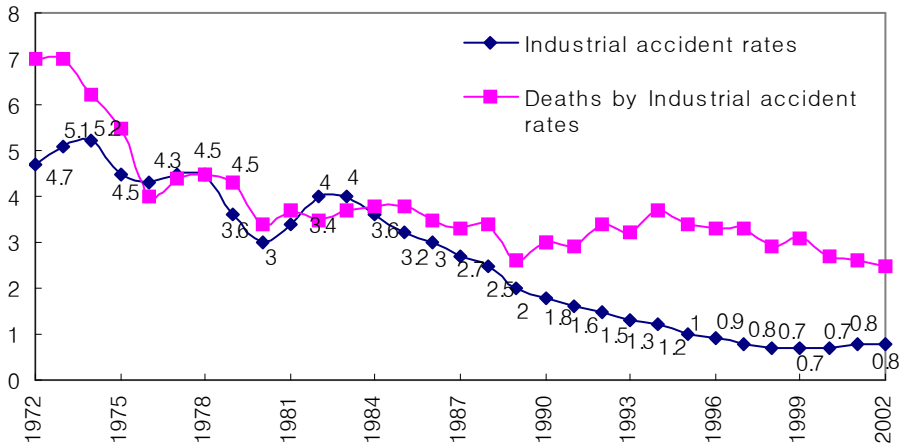


Figure 7. Industrial Accident Rates and Deaths by Industrial accident Rates.

*Source: Labor in Korea 1987 ~ 2002.*

These date indicate that the number of severely disabled workers has been growing steadily during the past 20 years or has at least not shown any improvement from the level a decade ago despite an overall decrease in the number of deaths has been increasing continually to date. This shows that safety management of work sites has not kept up with the progress of industrialization which has resulted in increase of projects with high risk profile such as the construction of high -rise building and facilities involving the use of heavy machineries.

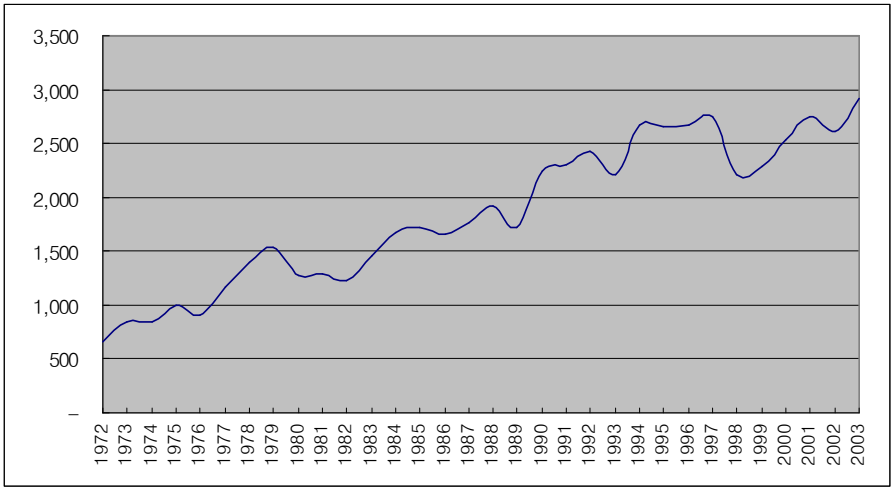


Figure 8. Number of Deaths by Industrial accident.
*Source: Labor in Korea 1987 ~ 2002.*

According to the figures, the number of deaths has been posting steady growth in the construction and manufacturing industries and eventually recorded the highest in these two areas. These two industries were followed by the mining and the transportation /storage /communications industries. However, the latter group of industries is showing a gradual decline in recent years. The interesting point is that the number of deaths in other industries has increased rapidly over the last 10 years. The number of severe disability cases is the highest in the construction and manufacturing industries, and that of the mining industry has been declining continuously during the last 5-10 years. Other industries have been showing a gradual increase in the severe disability cases in the last 10 years.

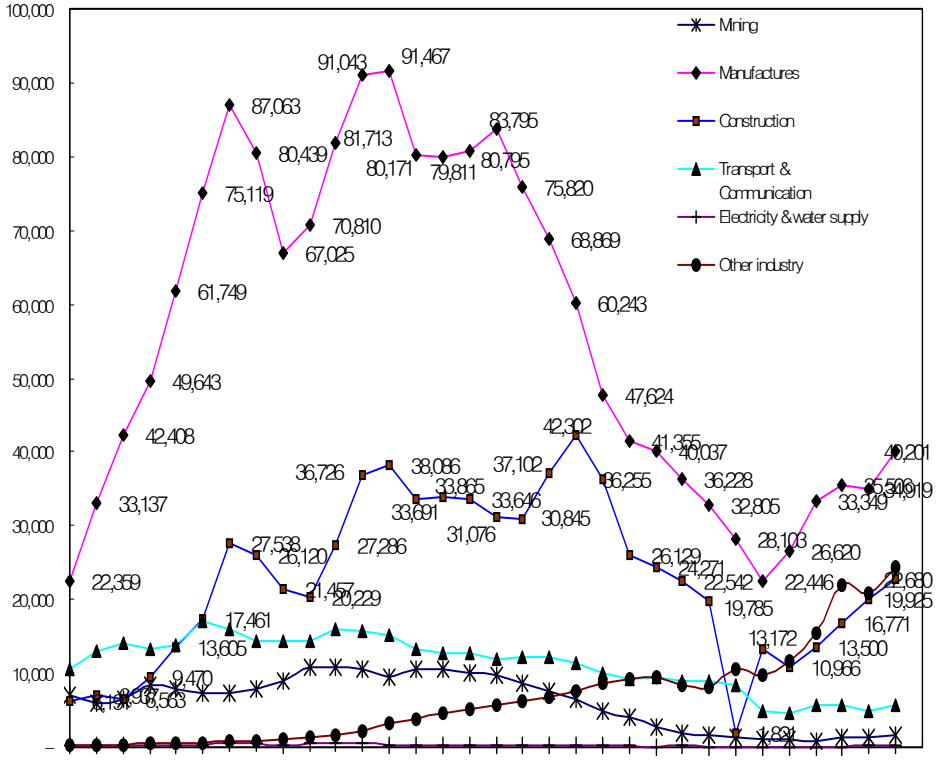


Figure 9. Trend in the Number of Industrial accident by Industry.

To be more specific, the number of workers who ended up with physical disabilities grades 1-3 had increased rather speedily in the manufacturing and construction industries up until 1995 before plummeting in 1996. The number of workers with disability grades 4-7 also increased rapidly until 1995 then significant drop in 1996. The declining trend continued until recently before picking up the pace again. Meanwhile, the number in the construction sector has continued grow gradually. The manufacturing sector saw a slight decline during the recent economic recession but saw a surge in 2001. Most industries posted a sudden increase in the number of severe disability cases in 1995 because of the disastrous collapse of Sam-Poong Department Store that killed or injured hundreds of people. If 1995 is excluded from the count, it is hard to say that the

industries other than mining saw a decrease in the severe disability cases (physical disability grades 1-3 and 4-7) over the last 10-15 years if we consider that the few temporary drops in industrial accident rates were due to the recent Asian financial crisis and the economic recession.

### 6.2 Occupational Diseases

Table 4. Frequency of Occupational Disease in Korea

| Rank of Frequency | Types of Occupational Diseases | Frequency |
|---|---|---|
| 1 | Cerebral&cardiovascular disease | 41% |
| 2 | Pneumoconiosis | 24% |
| 3 | Hearing loss | 13% |
| 4 | Physical demanding work | 8% |
| 5 | Lumbago | 4% |
| 6 | Other | 4% |
| 7 | Organic solvent | 3% |
| 8 | Metal and heavy metals | 1% |
| 9 | Specific Chemical | 0.8% |

*Source: Korea Occupational Safety and Health Agency, Occupational Injuries-Diseases and Statistical system in major countries, 2001.*

The types of officially recognized occupational diseases are stipulated in Article 35 of the enforcement decree of the nation's labor standard act. As is the case with injuries by occupational accident, only the diseases that necessitate treatment for four days or longer are acknowledged. Listed here are a total of 53 types of diseases that are recognized as work-related. The number of deaths caused by occupational diseases is simply included in the morbidity rate and is not recorded separately. Korea only acknowledges 38 diseases as occupational diseases.

Due to changes in the industrial structure, employment form and the kind of work available in the job market, the types of

occupational diseases are also undergoing changes of their own. The pneumoconiosis cases have been gradually reduced due to the decline of mining, new occupational diseases and work-related diseases including cerebral/ cardio-vascular diseases, musculo-skeletal disorders have increased with the increasing use of new chemicals, work requiring repetitive movement over a long period of time and extended compensation coverage for occupational diseases. Therefore, the number of patients of occupational diseases has been shown only a slight reduction.

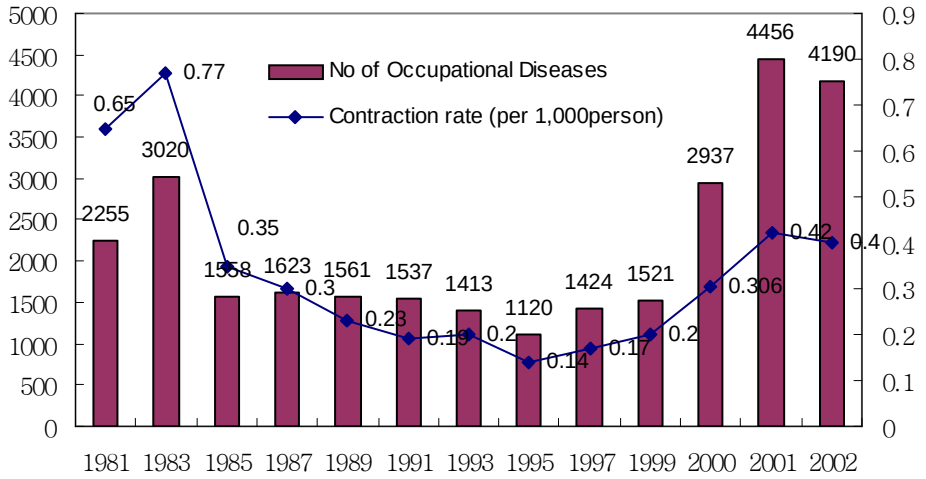


Figure 10. Occupational Diseases and Contraction rate by year: 1981~2002.

*Source: Korea Occupational Safety and Health Agency.*

The incidence rate of musclo-skeletal disease is on the rise in Korea as well, but the government has yet to carry out a proper fact-finding survey or develop any mid to long -term measures on this matter. However, the workers are increasingly voicing their demands for compensation in the musculo-skeletal disease and ergonomic working environments.

Pneumoconiosis and noise-induced hearing loss were major issues in occupational health through the 1980s, and remain

important problems today. Because of poor working condition and health problem in miners, the Pneumoconiosis Special Act was established in 1984 to protect miner's health. During the 1980s, many cases of lead and mercury poisoning were reported. In the late 1980s, carbon disulfide poisoning affecting 900 workers received national attention, shocking the public. Occupational cancer, asthma and neurological disease as well as heavy metal and organic solvent poisoning have been reported in 1990s. Because of increased compensation for cardio-cerebro vascular diseases, job stress emerged as a major issue in the late 1990s.

Recently, musculoskeletal diseases received attention, as the trade unions made one of labor's issues and let workers claim it with a group basis. Therefore, compensation for work-related diseases by the Industrial Accident Compensation Insurance includes mostly cardio-cerebro vascular diseases and musculoskeletal diseases since the late 1990s. Psychological stress caused by hierarchical work organization, long working hours, hard work and very competitive society is a newly appearing issue.

# 7. Industrial Accident Compensation Insurance and Industrial Accident Prevention Fund

## 7.1 Industrial Accident Compensation Insurance

### 7.1.1 Background

The industrial accident compensation insurance is a social insurance system, under which the state, on behalf of employers, take over responsibility for compensating workers for occupational accidents and diseases, such responsibility is imposed on employers under the Labour Standards Act. Thereby supporting the stable likelihood of accident victims and their families through quick and fair compensation, and at the same time guarantee the normal operation of companies by steading the heavy compensation costs that otherwise the employers should pay at a time.

In korea, the employers' responsibility for compensating for their workers' occupational accidents and diseases was first prescribed in the Labour Standards Act in 1953. However, what was required by the Act was not enough to give proper protection to workers at firms with weak compensation capacity. Thus, the government enacted the Industrial Accident Compensation Insurance Act in 1963 and enforced it from June 1964. According to the Act, the government must make quick and fair compensation to industrial accident victims through the insurance fund contributed by employers, establish and operate facilities needed for this purpose, and do a variety of activities to prevent industrial accidents and promote workers' welfare. In order to exchange the specialty and efficiency of industrial accident compensation insurance business, the government established the Korea Labor Welfare Corporation in May 1, 1995 and has since then entrusted it to manage the industrial accident compensation insurance.

### 7.1.2 Coverage of Industrial accidents compensation Insurance

Since it introduction, the coverage of the industrial accident compensation insurance has continued to expand, taking into account accident rates, business owner's capacity to pay insurance premiums, and administrative capacity. At the time of enforcement, the IACI was applied to 80 thousand workers of 64 manufacturing and mining business establishments employing 500 or more workers. From July 1, 2000, the insurance applied to all workplaces with once worker or more except some small business in agricultural, forestry, fishery, and construction industries.

### 7.1.3 Insurance Premium

To secure financial resources for industrial accident compensation insurance, the Korean Labor Welfare Corporation collects insurance premiums from employers of covered workplaces. The amount of insurance premium is obtained by multiplying each occupation-specific premium rate determined based on accident risk and similarly of economic activity, by the total wages paid for workers.

### 7.1.4 Insurance Benefits

Workers who have occupational accidents or diseases while working in workplaces covered by Industrial Accident Compensation Insurance and their surviving family members entitled to insurance benefits. The calculation of the insurance benefits is based on the worker's average wage. However, if the average wage is either below the minimum amount or above the maximum amount established and announced by the Minister of labor, the minimum or the maximum amount is considered the average wages of the

worker. If the worker has already received or will be able to receive industrial accident compensation insurance benefits, such a case is exempted from the obligation to compensate for accident imposed under the Labor Standards Act. Also, to the extent of paid benefit amounts, it is also exempted from the obligation to compensate for damages prescribed in the Civil Code or other laws.

### 7.1.5 Welfare Promotion for Industrial accident Victims and Support activities

*** Operation of Industrial Accident insurance facilities**

To help workers suffering from occupational accidents or diseases to return to work as soon as possible, the government is operating industrial accident insurance facilities which provide professional medical care and rehabilitation service. Under the control of the Workers Accident Medical Corporation, there are 9 industrial accident hospitals divided into 6 general hospitals and 3 special hospitals, 2 rehabilitation engineering research centers for vocation rehabilitation training.

Besides, for accident victims receiving medical care, the vocational rehabilitation counsellors of the Korea Labor Welfare Corporation help to establish vocational rehabilitation plans fit for individual characteristic, provide information on vacational training and business start-ups as well as offer psychology counselling services in order to support their successful return to work.

## 7.2 Industrial Accident Prevention Fund

### 7.2.1 Management and operation of the Fund

Korea's Ministry of Labor is the central control tower responsible for the development and management of various policies and projects on industrial accident prevention, compensation, and rehabilitation. The actual execution of the policies is delegated to the Korea Occupational Safety and Health Agency and the Korea Labor Welfare Corporation. The KOSHA focuses on the research and development on industrial health and safety techniques necessary for preventing industrial accidents. The agency also provides consultations and guidance on industrial safety. The KLWC provides the medical treatments, compensation, and rehabilitation services for workers injuries or disable by industrial accidents.

The Bureau of Industrial Safety of the Ministry of Labor and KOSHA jointly develop the proposal and the budget plan for the industrial accident prevention projects, which are deliberated firstly by the Labor Insurance Office and then approved by the Minister of Labor. Once the proposal is approved, the Labor Minister consults with the Ministry of Planning and Budget. The proposal is voted on by the Cabinet Council members and finally submitted to the National Assembly for deliberation and voting. National Assembly passes the proposal, it obtains the Labor Minister's approval for the project plan and budget. The board of directors at KOSHA then finalizes the detailed project plan and the budget, after which the plan is put into action.

### 7.2.2 The establishment and Formation of Industrial Accident Prevention Fund

From 1963, the Act on Special Accounts for Industrial Accident Compensation Insurance provided the legal ground to use the Fund to finance the Industrial Accident Prevention Projects. The first revision of the same Act in 1979 stipulated that reserve in excess of 5/100 should be put aside for respond promptly to large-scale disasters. The second revision of the Act in 1981 converted the reserve scheme to a funded scheme and created a system for long-term benefits payments. It also established the basic for investment in industrial accident prevention. This revision effectively started the engine for active prevention programs.

On January 1990, the Industrial Safety and Health Act was amended. This Act states that the government shall establish the Industrial Accident Prevention Fund in order to implement the industrial accident prevention projects efficiently. Also which goes on to specify the revenue source of the fund: more than 5/100 of the total appropriation falling under the Act on Special Account for the Industrial Accident Compensation Insurance; contribution and donations of the government or persons other than Government; Loan and borrowed funds; profits derived from the operation of the fund. The general account of the government within the range of 3% of total expenditure of the Industrial Accident Compensation Insurance and Prevention Fund.

In order to reorganize the various funds financed with either government or private contributions, the National Assembly hosted expert panel conferences with the related government agencies in 2000 and finalized the improvement plan aimed at streamlining the system and the funds. This plans was incorporated into the revision of the Framework Act on Fund Management. This bill passed the Assembly and was announced in 2001. In accordance with the

revised Framework Act on Fund Management, the project plans and budget and the Industrial Accident Prevention Projects and the Industrial Accident Compensation Projects could be developed separately by responsible agencies but must be merged and submitted as the operation plan for the Industrial Accident Compensation and Prevention Fund to the Labor Minister who will then submit it to the Minister of Planning and Budget.

### 7.2.3 Contribution to the Industrial Accident Prevention Fund

The Source of revenue includes the contribution from the Industrial Accident Compensation Insurance Fund and the general account, loan settlements, and other revenues. The IACI started making contributions to the IAPF from 1988 in accordance with the Act on Special Account for IACI, and 2.1~2.9% of the annual appropriation was invested until 1990. After revised the Industrial Safety and Health Act in 1990, 4.5~11.9% of the budget was invested in the fund annually from 1991 to 2001. Investment exceeding 10% were made over the three years from 1995 to 1997. This was because 300 billion won was invested during the three years of Special Project on Industrial Accident Prevention, which was implemented, with the goal of slashing industrial accident in small and medium sized business establishments. The contribution from the IACP Fund increased by over three-fold in the 12 years between 1991 and 2002, from 34.6 billion won to 114.5 billion won, and now accounts for 52.6%( 1 trillion won to 235.6 billion won) of the total fund (2 trillion 351.1 billion won).

Table 5. Government contribution from the General Account and Its Usage: 1997~2002

(Unit: Million KRW,%)[2)]

| | | Total | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Government contribution from the General Account (G/R over the previous year) | | 42,166 (100.0) | 8,048 | 7,548 (6.2) | 6,548 (13.2) | 6,548 (-) | 6.548 (-) | 6,926 (5.8) |
| Usage | 1. Improvement of Safety and Health Management of Small Enterprise | 19,878 (47.1) | 2,000 | 2,500 | 3,500 | 3,500 | 4,000 | 4,378 |
| | 2. Safety Cultural Campaign | 13,500 (32.0) | 3,500 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| | 3. Support for Labor Organizations | 3,288 (7.8) | 548 | 548 | 548 | 548 | 548 | 548 |
| | 4. Industrial Dynamics Research Center Project | 1,000 (2.4) | - | - | 500 | 500 | - | - |
| | 5. Support Project for Private Occupational -Disease Medical Centers | 4,500 (10.7) | 2,000 | 2,500 | - | - | - | - |

The contribution from the general account was 8 billion won in 1997 but decreased to 6.9 billion won by 2002. On period of 1997-2002, the contribution totaled 42.1 billion won, accounting for 2,6% of total fund accumulated and has averaged a mere 0.37%, it is far from meeting the 3% requirement during the six years period. In 2003 has increased to 8.67 million won, then maintained to 8.45 million won in 2004 and 2005, but has averaged mere 0.27% of total expenditure. Loan settlements and other revenues which posted 459 million won in 1991 grew to 167.5 billion won in 2002, accounting for 45.7% of total fund of 1 trillion won over 12 years.

In terms of expenditure, the contribution to the KOSHA has increased steadily from 17.2 billion won in 1991 to 143.5 billion won in 2002. The reason for increase between 1995 and 1997 was the temporarily implemented Special Project on Industrial Accident

2) In 1997: 1USD = 880 KRW; in 2001: 1 USD = 1,140 KRW

Prevention that transferred the budget for the Loan for Industrial Accident Prevention Facilities (361.1 billion won) from the Ministry of Labor to the KOSHA. In terms of total expenditure, the contribution for KOSHA accounts for 30-40% of total operating budget. The proportion was as high as 90% between 1995 and 1997 when the Special Project on Industrial Accident Prevention was implemented. The contribution for the KOSHA relative to the total appropriation of the last 12 years (1991-2002) was 52.5%.

### 7.2.4 Industrial accident prevention investment per insured worker

In 1988, the first year industrial accident prevention investments were made from the IACI Fund, 1,253 won was invested per worker. Then the Industrial Safety and Health Act was revised in 1990 to stipulate that 5% or more of the IACI budget was to be invested, the per capita investment was raised to 4,367 won in 1991, increased steadily year over year to 10,861 won in 1993 and even surpassed the 20,000 won level during the years of the Special Project on Industrial Accident Prevention (1995~1997). The investment started sliding with the end of the project and only showed a slight increase from 2001. According to the Act, the Government shall appropriate each fiscal year the contribution of the Government for the appropriation in the limit corresponding to 3/100 of the total appropriation for the Fund.

# III. Situation of OSH activities in Vietnam

## 1. National Introduction

### 1.1 Geography, natural and social characteristics

The Socialist Republic of Vietnam is located close to the centre of the Southeast Asian region. Vietnam is an S-shaped country with 331,690 sq km of land area, the oceanic territory's width is 12 nautical miles and the exclusive economic areas are 200-nautical-miles wide with a total area of 1 million square kilometers. Vietnam is divided into three geographical regions.

Vietnam has a tropical climate, affected by Asian season winds of which the most are northeast and southeast winds. There are two distinguished seasons in the North and the Northern Central of Vietnam caused by the influence of the northeast wind: the hot season lasts from May to October, and the cold season occupies the rest. The Southern Central and the South are affected mostly by the southeast wind, so their climates are more moderate and it is hot all over the year. The average temperature difference between the hottest and the coldest months in the North is as much as 1 3℃, while that in the South is often 2-3℃. There are some 1,500-2,000 sunny hours in Vietnam with the heating radiation per square centimeter of more than 100 kcal each year. There are about 100 rainy days throughout the year with a total rainfall of 1,500-2,000 mm per annum. The humidity of the air is around as much as 85 per cent.

Vietnam has a variety of mineral resources. Located beneath the subsoil are precious stones, coal and valuable minerals such as tin, zinc, silver, gold and antimony. Vietnam also has large deposits of oil and gas on its offshore islands and on the mainland.

The total population of Vietnam in 1976 was 62 million. As the end of 2003, total population was estimated at 80,000,000. The average annual growth rate of population was 2.1 and 1.7%/year in the periods 1979-1989 and 1989-1999 respectively. The average density of population in Vietnam was 230 persons/Km2as in 1999. Vietnam has a relatively young population with 39.55% of total population being below the working age, 52.83% of the working age, and 7.62% over the working age as shown by the 1998 statistic. Although Vietnam is a poor country, its education system is relatively well developed. Most children enter schools, and many provinces and districts have achieved literacy levels of 100% of their local populations. According to statistical data for the school year 2000-2001, the total number of pupils and students reached 20 million of which 1 million are students of universities and colleges, 800.000 are vocation students. For every 1000 persons there are 264 school students and 12 students of university or college level. According to the 1998 statistical data there were 13,330 health establishments, of which 1,944 were hospitals and local surgeries, 119 sanatoriums, and 11,201 health stations in communes, quarters and enterprises. By 1998, the total number of beds was 199,100, which translates into some 2.6 beds for every 1000 persons. The total number of medical doctors and nurses was 34,174 and 49,297 respectively, which means that there were 1.1 doctors or nurses for every 1000 persons. The Centre for Medical Hygiene has been set up in every province/city. The life expectancy of Vietnam was 71.3 year in 2003.

## 1.2 Economy-labor characteristics

### 1.2.1 Economic structure in industrialization

With the policy of building and developing the multi-sector commodity economy under the Socialism direction, the new economic sectors, in particular, the private have been growing rapidly and required favorable legal basis for development. Since 1980s and early 1990s, the Government has enacted several relevant laws such as The Foreign Investment Law, The Private Enterprise Law, The Company Law, and The Domestic Investment Incentive Law. These laws have created the favorable legal basis for different economic sectors, and there are a lot of changes from enterprises as the activities environment is more ventilated, business activities is more eventful, especially in industry, trade and transport. In 1991, in the whole country there were only 494 businesses, while in 2003 this figure became 72012. In average each year there were near 6000 new businesses created.

Vietnam has only way to develop the economic: carrying out industrialization to make sure a high growth rate of industries and services; creating an improvement in economic structure toward development of industrial production. Vietnam's GDP was about 40 billion USD in 2003 with the level of GDP per capita was nearly 500 USD. Vietnam has to promote fast and firm the economic growth. In agriculture, forestry and fishery and rural economy, there is a significant growth but not higher than 5% annually due to a biographic limitation. Therefore, an economic growth has to be based mostly on industries and services that can reach higher rate of growth not only by increasing input value but also by applying technology to raise added values. In the process of industrial development, heavy industries were focused (steel, cement, basic materials, electricity, chemistry and machinery, etc.) to make sure

the basic materials for the economy. In the process of economic reform, Vietnam has changed its economic policy gradually to ward market mechanism, improved its effectiveness and competitive power. Its comparative advantages have been considered in selecting which industries or services should be developed to make a breakthrough in the economic development. This is a fundamental factor of fast economic growth with economic scale of industrialized economy and a lower contribution of agriculture.

Table 6. GDP structure and major economic sectors

| | 1986 | 1990 | 1995 | 2000 | 2003 | Change |
|---|---|---|---|---|---|---|
| GDP (at real price, thousand billion VND) | 0.559 | 41.955 | 228.892 | 441.646 | 605.491 | |
| Agriculture, Forestry and Fishery (%) | 38.06 | 38.74 | 27.18 | 24.53 | 21.80 | -16.26 |
| Industry and Construction (%) | 28.88 | 22.67 | 28.76 | 36.73 | 39.97 | +11.09 |
| Services (%) | 33.06 | 38.59 | 44.06 | 38.74 | 38.23 | +5.17 |

*Source: Statistic Yearbooks in years.*

After 20 years of the economic reform, the economic structure of Vietnam has transformed basically. In particular, the economic sectoral structure has changed, presented in the changes in GDP of the three main sectors: agriculture, forestry and fishery; industry and construction; and services (See Table 6).

Industries and construction, oil and coal exploitation especially, has reached to high speed of development, leading to an advanced transformation. The output of the oil and gas exploitation increased to 20 million tons per year, this of coal increased 3 times, electricity increased by 4-5 times. Processing industry has also reached to a high speed of development, accounted for 80% of industrial output value. The export value of Textile, garment and footwear has

increased by 15% a year on average. The output of steel production has increased from 100 tons to 2.5 million tons. Constructive materials, electronic production and construction have enhanced strongly to meet demands of developing production, improving living standard of the mass and cause of urbanization. Services, especially ones relating to economic infrastructure and urban development have promoted strongly. For example, gross transported goods increased by 5 times, Service'proportion in GDP increased by 5% annually.

Table 7. Number of acting enterprises by kind of economic activity

| | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|
| | Enterprise | | | |
| Total | 42288 | 51680 | 62908 | 72012 |
| Agriculture and forestry | 925 | 875 | 972 | 939 |
| Fishing | 2453 | 2563 | 2407 | 1468 |
| Mining and quarrying | 427 | 634 | 879 | 1029 |
| Manufacturing | 10399 | 12353 | 14794 | 16916 |
| Electricity, gas and water supply | 112 | 153 | 185 | 253 |
| Construction | 3999 | 5693 | 7848 | 9717 |
| Trade, repair of motor vehicles and household goods | 17547 | 20722 | 24794 | 28396 |
| Hotels and restaurants | 1919 | 2405 | 2843 | 3287 |
| Transport, storage and communications | 1796 | 2547 | 3242 | 3976 |
| Financial intermediation | 935 | 1033 | 1043 | 1054 |
| Science and technology activities | 6 | 8 | 12 | 18 |
| Activities related to real estate business and consultant | 1375 | 2195 | 3235 | 4132 |
| Training and education | 77 | 86 | 124 | 187 |
| Health and social work | 25 | 47 | 81 | 90 |
| Culture and sport activities | 120 | 144 | 183 | 222 |
| Personal and public service activities | 173 | 224 | 269 | 328 |

*Source: Statistic Yearbook 2003.*

The development of different economic sectors has mobilized and exploited internal potentials and attracted foreign investment. They in turn have made significant contribution to the growth of economy, created many jobs for Vietnamese workers especially for those in the countryside. They have also contributed the restructuring of the economy-social stability the country. From 2000 to 2003, yearly increased by 20% on average in comparison with 2000 (increased to 29724 enterprises for three years). The private enterprises have proliferated in and bounds after the Enterprise Law came into force in 2000. During industrialization of economy, the Construction has 9,717 enterprises, increased by 47% a year on

average (increased to 5,718 enterprises for three years). There are 18,198 enterprises in Industry, including mining, manufacturing, electricity, gas and water supply, increased 25.3% a year on average (increased to 8,160 enterprises for two years). The Agriculture, forestry and fishing have 2,407 enterprises, decreased by 9.6% a year on average (decreased to 971 enterprises for three years). In Trade and other services, there have 41,690 enterprises, increased by 24.6% a year on average (increased to 17,717 enterprises for three years). The types of enterprises are widely divers and include services, crafts etc…and proliferated everywhere in the country.

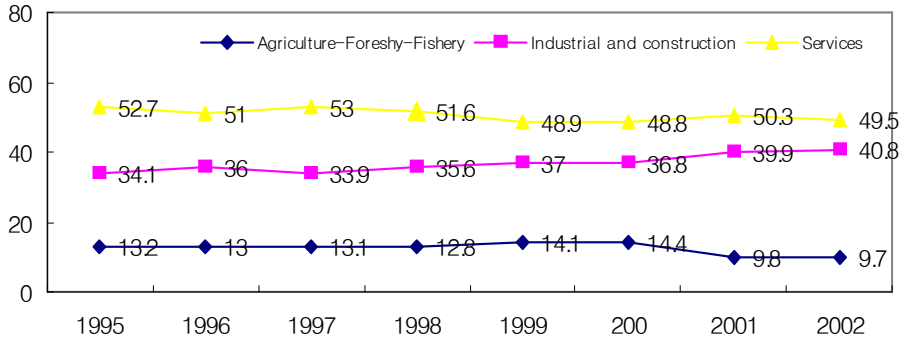


Figure 11. Investment capital structure.

### 1.2.2 Labor characteristics

Total labour force at the end of 2004 is over 41,500,000, and with the present population growth rate, this number is estimated to significantly increase in the next decade. Women account haft of the labour force in Vietnam, specifically: 51% in agriculture, 49% in industry, construction and service. Every year more 1 million jobs are needed to meet the demand of the growing labour force.

Table 8. Employed population by kind of economic activity (Unit: 1000 persons)

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Total | 37609.6 | 38562.7 | 39507.7 | 40573.8 | 41586.3 |
| By kind of economic activity | | | | | |
| Agriculture, forestry | 23492.1 | 23385.5 | 23173.7 | 23117.1 | 23026.1 |
| Fishing | 988.9 | 1082.9 | 1282.1 | 1326.3 | 1404.6 |
| Industry | 3889.3 | 4260.2 | 4558.4 | 4982.4 | 5293.6 |
| Construction | 1040.4 | 1291.7 | 1526.3 | 1688.1 | 1922.9 |
| Trade | 3896.9 | 4062.5 | 4281.0 | 4532.0 | 4767.0 |
| Hotels, restaurant | 685.4 | 700.0 | 715.4 | 739.8 | 755.3 |
| Transport, storage and communications | 1174.3 | 1179.7 | 1183.0 | 1194.4 | 1202.2 |
| Culture, health and education | 1352.7 | 1416.0 | 1497.3 | 1584.1 | 1657.4 |
| Other service | 1089.6 | 1184.2 | 1290.5 | 1409.6 | 1557.2 |

According to statistics of Ministry of Labor in 1946, in the Northen and Central of Vietnam have only 100.000 employees. In which, there are 25.000 employees working at factories of Foreign owned. Total number of employees who are working at enterprises as of 31 December 2003 according for 5,175,092 persons, near 4 times in comparison with the year 1995 and 1.5 times in comparison with the year 2000, yearly increased by 14.5% on average from 2000 (increased to 1.638 million persons for three years).

The most employees are used in manufacturing now there are 2.557 million persons, according for 49% of total employees in enterprises sector. The number of employees in this sector on 2003 is 3.3 times in comparison with the year 1995 and 1.6 times as compared to year 2000 (increased to 20% a year on average for three year). And then, there are 817 thousand persons in construction sector, according for 16.6%, in Trade, it has 504 thousand persons, equal to 9.7% and there are 163 thousand persons in mining, according for 3.1%, etc... The number of employees in Construction sector most increased rapidly, as of 2003, its employees

increased to 3.7 times compared to 1995 and 1.6 times in comparison with year 2000.

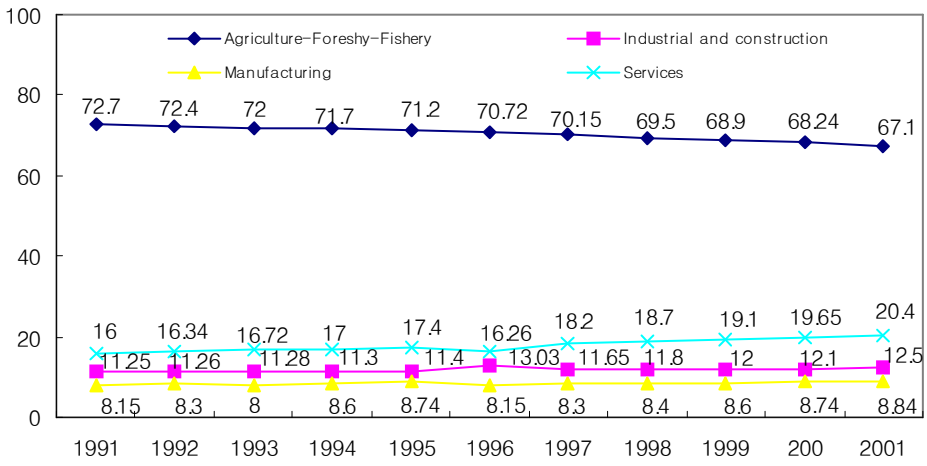


Figure 12. Labor structure by kind of economic activity.

Table 9. Number of employees in enterprises by kind of economic activity (Unit: person)

| | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|
| Total | 3,536,998 | 3,933,226 | 4,657,803 | 5,175,092 |
| Agriculture and forestry | 230,001 | 223,042 | 225,064 | 220,221 |
| Fishing | 37,253 | 40,376 | 40,746 | 31,911 |
| Mining and quarrying | 153,294 | 128,955 | 155,470 | 162,736 |
| Manufacturing | 1,597,431 | 1,799,434 | 2,202,943 | 2,557,404 |
| Electricity, gas and water supply | 72,016 | 77380 | 82,256 | 86,839 |
| Construction | 529,351 | 627,591 | 799,001 | 861,791 |
| Trade, repair of motor and household goods | 368,897 | 402,989 | 463,042 | 503,672 |
| Hotels and restaurants | 61,086 | 67,395 | 80,198 | 87,123 |
| Transport, storage and communications | 327,911 | 377,024 | 382,841 | 408,247 |
| Financial intermediation | 64,089 | 70,521 | 77,545 | 84,406 |
| Science and technology activities | 132 | 127 | 300 | 296 |
| Activities related to real estate business and consultant | 58,692 | 78,285 | 100,713 | 115,145 |
| Training and education | 1,808 | 1,471 | 2,241 | 2,834 |
| Health and social work | 1,857 | 2,140 | 3,306 | 3,604 |
| Culture and sport activities | 12,562 | 10,654 | 13,314 | 14,646 |
| Personal and public service activities | 20,618 | 25,842 | 28,823 | 34,217 |

## 1.3 The socio - economic development strategy of Vietnam to the year 2010, orientation toward the year 2020

Determination of the Party Congress IX (2001) of Vietnam Communist Party and the Determination of Government presented the task of industrialization must be carries out together with GDP and labor structural improvement toward the development of industries and services. To 2010, the labor population is 56.8 million, 40% of labor force having vocational formed, proportion of student

per ten thousands people is 200. The labors working in agriculture, forestry and fishery, in industrial, service shall be 50%, 23-24% and 26-27%, respectively; the proportion of agriculture, forestry and fishery, industrial and service on GDP shall be 16-17%, 40-41% and 42-43%, respectively. The strategy presses developing the branch have a higher competitive power, to control the internal market and push up the exports, as the branches of processing the agricultural, forestry and fishery products, garment, shoes industry, electron and producing the mechanical products, and consume goods. Developing on chosen some heavy industrial factories, as petroleum and gas complex, refine oil, mechanical manufactures, metallurgy, basic chemical, fertilizer and materials for construction…. Some other quantitative target as in the year 2010, the production of paper increasing more 200%, production of garment is 100% and employing three million employees, breed and processing sea products reaches 2 million tons of production with 2.5 billion USD of export value; the production of steel increasing more 50%, construction materials is more tens million tons of cement, millions item and m2 of brick, tile, also employing more than thirty thousand employees. The production of coal increasing more 100% of mass compare with 2005, the output of electricity increasing from 48 billion kWh in 2005 to 90 billion kWh in year 2010 with investment capital is 10 billion USD, investment on post and communication branch is from 4 to 6 billion USD, on constructing the road is 20 billion USD and on constructing the house is 10 billion USD from 2000 to 2010, respectively.

According to document of the IX Communist Party of Vietnam' congress and determination of Government, the target of development plan to 2020 is creating foundation for Vietnam becoming an industrialized economy in the year 2020 toward a modern one. The strategy presses short time industrialization and modernization with advanced technologies and knowledge economy

in the process of economic development in Vietnam. The quantitative target was that GDP of the year 2020 is planned 8 to 10 times higher than that of 1990. Some target related with OSH are 80% total enterprises shall be issued the certificate of environment standard or ISO 14001, 100% products for export and 50% products for internal market shall be labeled by ISO 14021, 100% new enterprise shall be installed the fresh technologies or equipments that don't pollute the environment, control the waste to meet environment standard, strictly control the chemicals, especially the high toxic chemicals.

## 2. OSH Legal system

### 2.1 Osh Law and regulations system history

Occupational Safety and Health is the main policy in Vietnam. After the August Revolution in 1945, as soon as the Vietnam Labour Party, Government have to concerned to OSH activities. At that time, the Government cannot developing the new policy system, it applied the Labor Code in 1936, and has modified some articles, especially the articles concerned to protecting the rights, benefits of employees, for example "The working time shall not exceed 8 hours in a day". In 1947, President Ho Chi Minh promulgated a degree of labour policy, which is number 29/SL, date 12/03/1947. Which included some regulations on the labor protection. The Article 133 says: "All the enterprises must have enough equipment to protect the health of workers."The Article 140 stipulates: "The working places must be large, well-ventilated with enough sunlight." The above mentioned regulation though were still short, but the initial important steps reflected the consideration of President Ho Chi Minh as well as of State about the labor protection. Then in May 22nd of 1950 the Vietnam's government released Decree No 77SL stipulating the working hours, rest and extra payment for workers.

After the Northern of Vietnam has liberated in 1954, the Government and peoples concentrated on recovering and developing the economic through the Economic-Socio Reformation and Development Plans. The Government promulgated the Labor Protection Regulations (Dergee No 189/CP, dated 18/12/1964), pursuant to this Degree, Ministry of Labor has established the occupational safety inspection to developing the safety policy system and implementation the safety inspection activities. After that, Ministry of Labor has promulgated the policy f or workers, who is occupational accidents (Circular No 02/TT-LD-LB, 12/01/1966) and has issued the safety guidelines for factories(Circular No04, 4/1966). Period from 1975 to 1985, after the country has unified, the factories was recovered and many new factories has established for soldiers be coming the employees, its was supported from Soviet Union, European Eastern Countries and China. From this supports, many machines and equipments came to Vietnam. To satisfying the requests on occupational safety and health, the Ministry of Labor has promulgated the OSH regulations, standards on usage the new machines and equipments, and the guidelines on occupational accidents investigations, statistics. Most of OSH standards has translated and modified from Soviet Union.

Through all periods, The Government always to pay attention to developing the OSH activities for employees. At the war time, at workplaces, the slogans are "safety for production and production should be safe" and "safety is the friend, accident is the enemy" was always voluntarily paid attention and implemented by employees. However, the documents on OSH only in the Degree, circular of Government and Ministries. When transfer into the reform economic period, whole perfection of the legal systematic to meet the market mechanism in Vietnam was started from 1986, After nearly 27 years implementing the "Temporary regulations on

the labor protection," in order to systematize the Nation's policy on this problem in September 1991 the Government Council issued the Labour Protection Ordinance, which was considered the most essential and comprehensive legal document up to that time. The National Assembly at the same time also set up and approved the Law on people's health protection (1990), Trade Union Law (1990), Law on Environment Protection (1993), which have some regulations related to the labor protection. Especially in July 1994, the National Assembly issued the Labour Code, which, apart from the ninth chapter specialized on the occupational health and safety, includes other articles related to the labor protection. Thus, so far the main legal documents related to the labor protection issued by the government has been adopted in Vietnam.

Coming along with these major legal documents, during the last decades, the Government, some relevant ministries and the Vietnam Confederation of Labour issued series of decrees, decisions, circulars and guidance on labor protection. A system of standards on labor protection at the governmental and ministerial levels also has been released and is under implementation.

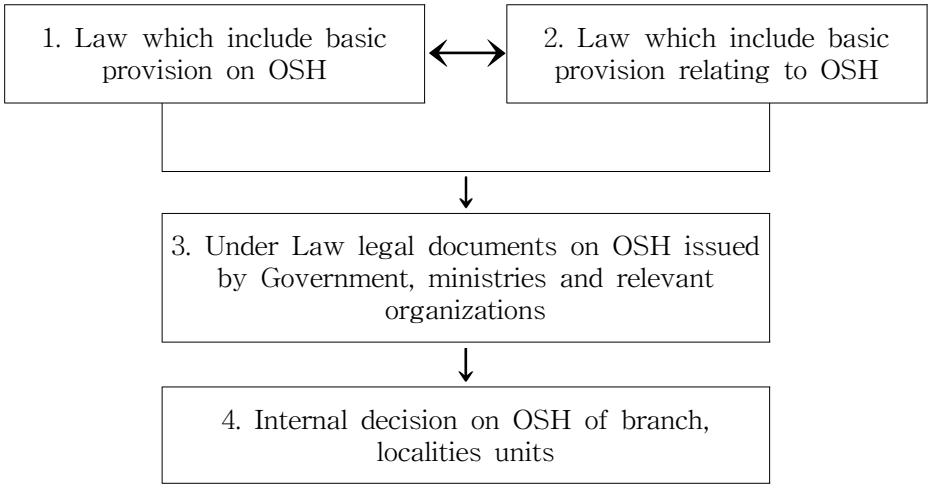


Figure 13. The Vietnam's current OSH legal frame.

## 2.2 The Major OSH regulations content

### 2.2.1 Responsible of Employers

Employers' responsibilities on labor protection, workers' health management has been described in current Vietnamese Labour Code, which comprises 17 chapters and 108 articles. Included in this Code are 14 articles of the Chapter IX and various others relating to OSH, which state:

- Employers must ensure OSH conditions, which have to be addresses in the labor contracts (Articles 17, Chapter I and Article 29, Chapter IV) and the collective labor agreements between employers and the whole workers (Article 46, Chapter V).

- Employers must periodically check out the safety of machinery and equipments, based on standards. They must also provide covers, preventive mechanisms and instruction to prevent occupational incidents as well as accidents. When there exist hazards of occupational accidents, employers must immediately give out measures to sweep them out (Articles 98,99 and 100, Chapter IX). Employers are not allowed to dissolve themselves labor contracts when workers are being under occupational accident treatments (Article 39, Chapter IV). The employers also have to pay full salaries to workers during this time (Article 143, Chapter XII).

- Employers must base on health standards regulated for each type of works to conduct their recruitments (Article 102, Chapter IX). The employers must periodically provide health examinations to workers; measure harmful factors and apply measures to reduce these factors to the permissible standards. Technical and health care equipments must be provided to prevent incidents (Article 97, 100, Chapter IX). Measures must be applied to remove toxicant and bacteria; supply sanitary facilities, material allowance, working as well as breaking time preferences at harmful and toxic workplaces (Article 104, Chapter IX).

- Employers must obligate to care for workers' health and in time provide first aids and treatment when needed. The employers must bear the responsibilities of letting occupational accidents happen. They must pay off health care costs and social insurance for workers who suffer from occupational accidents and diseases (Articles 103, 105, 107, Chapter IX). They also have to declare, investigate, make records, statistics and periodically report on the situations of occupational accidents and diseases at their units.

- Employers must take the responsibilities to provide personal protection equipments, which meet regulated standards on quality and styles (Article 101, Chapter IX); conduct training; instruct and inform regulations as well as measures on safety assuanrance when working, and accident hazards in each type of works, which need to be avoided (Article 102, Chapter IX).

- Besides, included in Chapter X, XI of the Labour Code are some provisions, which forbid the employment of female and minor workers in heavy and dangerous works. There are also provisions regulating the reasonable working time arrangement; assigning cadres to look after the situation of female workers and providing suitable sanitary facilities to women (Article 113, 116, Chapter X; and Article 121, 122, Chapter XI).

- Regarding to social insurance, employers must extract 15 per cent of their salary funds to buy social insurance for workers. In cases that workers suffer from occupational accidents or diseases, employers must pay full salaries to them when these workers are being under treatments (Articles 141,143, Chapter XII).

- The Labour Code also outlines fines applied to employers when they violate labor regulations described in Chapter XVI.

To give out further details on the responsibilities of employers on OSH, based on the Labour Code, the Prime Minister issued Decree 06/CP which included Articles 13 and 14 stating that employers must: Outline plans on OSH and working condition improvement when making production plans; Provide sufficient and proper

personal protection equipments; Assign cadres to manage and supervise OSH activities and cooperate with trade-union organizations to maintain the network of OSH officers; Set up and promulgate internal OSH regulations are applied within their units only and do not against the laws; Organize OSH training courses for workers; Seriously comply with regulations on declaring, investigation and statistics of occupational accidents and diseases; Have the rights to force workers to comply with the laws and regulations on OSH; give awards and punishments to workers on OSH; have the rights to complain about decisions made by OSH inspectors.

### 2.2.2 General Requirements

- The normal working hours shall not exceed 8 hours per day or 48 hours per week The daily working hours shall be reduced by one to two hours for workers engaged in extremely heavy, toxic or dangerous works The number of additional hours worked shall not exceed four hours a day, or 200 hours a year, with the exception of some special cases, the number of additional hours worked shall not exceed 300 hours a year(Article 68-Labor Code);

- The production, usage, storage, transportation of machinery, equipment, materials, energy, electricity, chemicals, vegetation protecting substances, and the replacement of technology and importation of new technology must be carried out in accordance with occupational safety and hygiene standards. Machinery, equipment, materials and substances having strict requirements for occupational safety and hygiene must be registered and inspected. The employer must ensure that machinery, equipment, workshops and storehouses are checked and repaired periodically in accordance with occupational safety and hygiene standards (Article 95, 96-Labor Code);.

- In case there is a risk of employment accidents or occupational diseases arising at the workplace or from machinery

and equipment, the employer must immediately take measures to overcome such risk or order stoppage of activities at the workplace, of the operation of the machinery and equipment involved, until the risk is overcome (Article 99-Labor Code)

- An employee shall have the right to refuse performing the work or to leave the workplace that clearly presents an imminent and serious threat to life or health (Government Degree No 06/CP)

- All cases of work accidents and occupational diseases must be declared, investigated, recorded, included in the relevant statistics, and reported periodically to local authorized labor agencies (Article 108-Labor Code).

### 2.2.3 Safety Requirements

- Prior to construction, expansion or transformation of the premises for the production, use, maintenance, storage and stockpiling of machinery, equipment, materials and substances requiring strict occupation safety and health measures, the investors, employers must produce prove studies on measures to ensure OSH. The OSH standards are compulsory employers must develop a rule on OSH for each kind of machinery, equipment and material and for workplace in pursuance to the national OSH standards (Article 96-Labor Code, Government Degree No 06/CP).

- Before the commencement of the job, workers, including the trainees and apprentices must be provided with guidance and training on OSH standards and regulations. The occupations regarded as having strict OSH requirements, including the operating machines and equipment which likely to cause occupational accidents, working in harmful and dangerous condition such as at height, under the water, exposed to high intensity radiation, near or in contract with explosives, toxic substances, having complicated safety procedures, the workers must be provided specific training and Safety Certificate (Article 102-Labor Code, Government Degree No 06/CP)

### 2.2.4 Health Requirements

- An employer must ensure that the workplace meets the standards on space, ventilation, lighting, and the health standards permitted in respect of dust, steam, toxic gas, radioactivity, electromagnetic field, heat, humidity, noise, vibration, and other harmful factors. Such factors must be periodically checked and measured at least once a year (Article 97-Labor Code)

+ Enterprises are responsible for providing health care to the employees and for giving first aid and emergency aid to the employees, when required. Appropriate technical and medical facilities such as first aid medicine, anti dose, emergency charts, dressing, cotton wool, gauze, scissors, stretchers, gas mask, poison prevention and ambulance car. The employer must have a plan approved by relevant local Health Offices to cope with emergency cases. Worker shall have periodical medical examination at least once a year, and for those who are engaged in dangerous or toxic work at least once every six months and shall receive allowances in kind, and enjoy preferential treatment in respect of hours of work and of rest. Employees working in the workplace holding harmful conditions likely to cause occupational disease shall be provided with occupational diseases examination (Article 103, 104-Labor Code, Government Degree No 06/CP). An employer must ensure that employees working at places exposed to risks of intoxication and infection shall, after work-hours, be provided with oxidations and infection measures and other personal hygiene measures (Circular No13/MOH).

+ An employer must not assign female employee to heavy, dangerous work, or work exposed to toxic substances that are harmful to their child bearing and rearing functions underground work in mines or work immersed in water. A female employee performing heavy work, on reaching her seventh month of pregnancy, shall be transferred to a lighter work, or have her daily working time reduced by one hour places where female worker is

employed must have cloakrooms, bathrooms and toilets for women (Article 113-Labor Code)

## 3. OSH Administration system

### 3.1 OSH administration system historical

Before the year 1961, in Vietnam had not specific agency on OSH, the OSH regulations was established by the policy agency, and the OSH inspections was implemented by the Labor Inspection Department under the Ministry of Labor. In 1961, the Department of Labor Protection was established to carry out develop the policies on OSH, which is the first specific agency on OSH in Vietnam. In the year 1963, the Department of Safety Technical Inspection was established to carry out the activities of OSH inspection. The Ministry of Health has established the occupational health division under the Department of Prevention Health to carry out develops the policies on occupational health. On this period, the State Inspectorate of Occupational Health under the Ministry of Health.

In the year 2003, the revised Labor Code officially took effect. According to this Labor Code, State Inspectorate of Labor under the Ministry of Labor, Invalids and Social Affairs took on the function of inspection of labor policy, occupational safety and health. To meet the requiring on OSH in the new situation on progress of industrialization in Vietnam, the Government has established the Bureau of Safe Work from Department of Labor Protection in 2003, which took on the function of development of OSH policies and supplying the OSH training service. Recently, Vietnamese management and inspection system on labor protection despite some shortcomings have been improved gradually, which clarifies the positions and the roles, the responsibilities and the rights of relevant organizations to contribute greatly to the development of labor protection in Vietnam. The administrative system can be briefed as followed:

- The government has the united control on the labor

protection.

- Ministry of Labour, War Invalids and Social Affairs (MoLISA) and Ministry of Health (MoH) are assigned by government to take administrative management on labor protection. To carry the assignment, the above ministries have set up:

+ Bureau of Safe Work (under MOLISA)

+ Health and epidemic prevention Department (under MOH, there is a division in charge of occupational health)

+ State inspection system on the occupational safety and health (from central to local levels under MOLISA)

+ Institute of Labour science and Social affairs (under MOLISA)

+ Institute of Occupational health and Environment (under MOH)

+ MOLISA also sets up evaluating centers on special equipment

- Economic-technical ministries and industries are in charge of labor protection by themselves. These ministries and industries have no specialized department, but a division being in charge of labor protection locating at Labour Department or Scientific and Technical Department. In some special cases in the ministries there will be set up evaluating centers or specialized divisions on the labor protection (for example, evaluation on boilers and pressure-equipment; inspection of the radiation-safety; marine registration etc.)

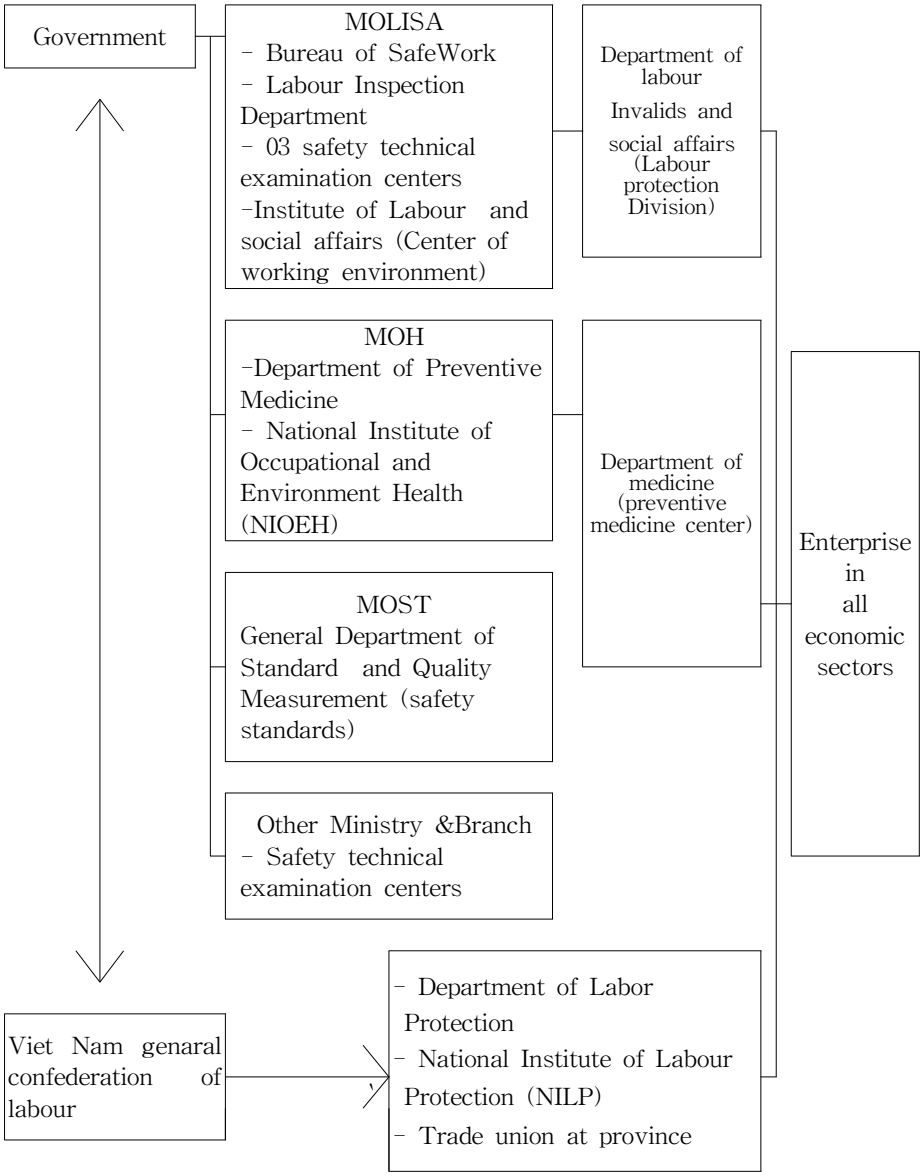


Figure 14. The Chart of OSH management system in Vietnam.

- The administrative system on labor protection in provinces and cities is located at Labour or Health centers or belongs to specialized departments.

- At the enterprises based on business-scale there will be set up a safety or health department or only a labor protection division

belonging to Labour and Salary department, Administrative department or Technical department. According to the Law, the enterprises should establish a network of safety and health officers, which is under direct management of executive board of local trade union.

-Regarding to the trade union, the Law stipulates that it has an important role to the labor protection. Especially the Vietnam General Confederation of Labour (VGCL) was assigned by government to manage the scientific research on labor protection. Thus, the administrative system on the labor protection under VGCL was set up as follows:

+ The National Institute of Labour Protection. Following the government decision this is the national institute under the management of VGCL.

+ The safety and health officers network run by Department of Labour Protection under the VGCL's system and of ministerial trade unions from central to local levels.

### 3.2 OSH inspection system

To perform the Law of occupational safety and health, the State Inspection System of Occupational Safety and Health was established from centre to provinces. The State Inspectorate of Occupational Safety and the Ministry of Labor, Invalids and Social Affairs, the State Inspectorate of Occupational Health under the Ministry of Health. In 2003, the revised Labor Code officially took effect. According to this Labor Code, State Inspectorate of Labor under the Ministry of Labor, Invalids and Social Affairs took on the function of inspection of labor policy, occupational safety and health. Thus, the function of occupational health inspection was transferred from Ministry of Health to Ministry of Labor, Invalids and Social Affairs.

The function of State Inspectorate of Occupational Safety and Health including: to carry out inspection of the compliance with statutory provisions on labor, occupational safety and occupational hygiene; to inquire into work accidents and violations of stipulated standards on occupational hygiene; Take part in developing and guiding the application of the system of standards and different regulations on occupational safety and occupational hygiene; To deal with complaints and grievances on labor affairs in accordance with laws; To make decisions within its competence and submit recommendations to other competent authorities in dealing with breaches of labor laws. While carrying out their functions of inspection, labor inspectors shall have the power: To inspect and investigate anyplace liable to inspection within their competence, at any time without advance notice; To require the employer and other persons concerned to supply information, data and documents relevant to inspection or investigation work; To receive and deal with grievances and complaints concerning breaches of labor laws, in accordance with the provisions of the laws; To decide on temporary suspension of the use of machinery, equipment, work places, which show imminent danger of work accidents or serious pollution of the working environment.

According to statistics, until the end of 2002, there were only 297 labor inspectors in the whole country. The occupational safety and health inspection function is imbalance between the quantity of labor inspectors and the workload they have to take on. Besides, labor inspectors'capacity is also a concerned issue. Most of labor inspectors have not been equipped with basic knowledge of Occupational safety and health.

### 3.3 Establishment of occupational health division

Up to now, in 61 province/cities over the country, there have been 39 Preventive Medicine Centers establishing occupational health division in theses centers. In 13 Health Center of industrial branches there have been 8 centers with independent occupational health division. Therefore, 47/74 local health centers and industrial branches established occupational health division (accounting for 63.5%). In some Industrial Zone, the Center of Occupational and Environmental Health was established in order to meet the needs of management and health care for workers in the provincial area.

Total number specialized and responsible staffs in occupational health division is 493, in which there are 261 medical doctors(52.9%), 15 pharmacists (3%), other staffs with university graduation are 59(12%), intermediate level staffs and nurses are 133(27%) and 38 other. So, for large -scale enterprises there are 64.3% of enterprises having medical staffs, 36% of enterprises have health station. 25.5% of medium -scale enterprises (MSEs) have medical staffs and 5.7% of SMEs have health station. Almost small-scale enterprises do not have health facilities.

Table 10. Organization of health network at enterprises

| Type of Enterprise (No of workers) | Total No of Enter-prise | No of Medical staff | Medical doctor/ pharma-cist | With medical staff | With medical contract | With health station | Without medical doctor | Other |
|---|---|---|---|---|---|---|---|---|
| >200 | 3004 | 6026 | 1168 | 1932 | 115 | 1082 | 464 | 308 |
| 51-200 | 3183 | 1144 | 236 | 812 | 48 | 183 | 1664 | 43 |
| <50 | 24778 | 128 | 5 | 97 | 47 | 9 | 13400 | 2628 |
| Total | 30965 | 7298 | 1409 | 2841 | 210 | 1274 | 15528 | 2979 |

There are 36 occupational disease consulting-rooms (constituting 40.5%) established in 30 provinces and 6 health centers of industrial

branches. In different provinces the establishments of occupational health division and occupational disease consulting rooms are now continuing to complete.

## 4. Occupational Safety and Health Management activities

### 4.1 OSH Inspection activity

Although the number of labor inspectors is still small, from 1996-2002, labor inspectorates carried out inspection in 23.855 enterprises (this does not include statistics of 2001). This means that labor inspectorates inspected an average of 4,771 enterprises a year. Though the number of inspection in enterprises is still small comparing with total enterprise, so it still contributed to promote the compliance with occupational safety and health legislations in enterprises and showed a great effort of state inspectorate of occupational safety and health.

According to statistics in Table 11 the proportion of violation is decreased year by year, from 57.1% in 1996-1998 to 12% in 2002. It means the prevention measures are more important than punishing measures, although enforcement roles of inspection is always stressing. However, the advisory function on occupational safety and health inspection courses are little performing, because the inspectors' capacity and quality are slow and inspection method is not according.

Table 11. Occupational Safety and Health Inspection from 1996 to 2002

| Content | 1996-1998 | 1999 | 2000 | 2002 | Total |
|---|---|---|---|---|---|
| Number of Enterprises has inspected | 7956 | 9249 | 4800 | 1750 | 23755 |
| Number of Violation | 4545 (57.1%) | 2508 (27.1%) | 1300 (27.08%) | 210 (12%) | 8563 (36.05%) |

### 4.2 OSH researching activities

To promote the labor protection work, the scientific and technical development of labor protection must be specially paid attention to. Knowing well this concept, since the years when the US was fiercely destroying the North, the trade union has actively prepared and asked the State to allow the establishment of a scientific and technical research base for labor protection in Vietnam. In 1971, the Government decided to set up the National Institute of Labour Protection (NILP) and designated the VGCL as its direct management.

So far, with the cooperation from institutes, universities, production units and scientists, the NILP has completed a lot of subjects of scientific research of labor protection and applied their results to production practices. Among hundreds of subjects compiled by SRILP, there are two State-level modern scientific and technical programs that were successfully finished in the two five year plans including the 1981-1985 and the 1986-1990 plans. During the period of 1991-1995, the NILP has conducted two State-level subjects and tens of others at VGCL-level and unit-level in labor protection. The NILP has also carried out thousands of working condition improvement projects, accomplished more than 100 varied State-level standards of OSH that have got approval and promulgated by the State. A national exhibition house of labor

protection was constructed, and training courses for managers, scientists and laborers have been regularly organized by the NILP.

Table 12. Number of papers in occupational health of NILP and NIOEH

| Topic | By NILP (1981- 2001) | By NIOEH (1984-2004) |
|---|---|---|
| Physical | 54 | 31 |
| Pneumoconiosis | 2 | 16 |
| Chemical | 25 | 48 |
| Musculoskeletal | - | 10 |
| Stress | - | 1 |
| Ergonomic | 7 | 10 |
| Work physiology | 10 | 24 |
| OSH management | 37 | 59 |
| Work environment | 17 | 64 |
| Health promotion | - | - |
| Diseases: -Skin disease | - | 14 |
| - Cancer | - | 1 |
| - Cardio-vascular | - | 1 |
| Other | 2 | - |
| Total | 154 | 280 |

At the same time, the National Institute of Occupational and Environment Health (NIOEH) was established in 1984under the Ministry of Health, and other labor medicine centers of many branches and universities have also undertaken subjects of scientific research and projects for supporting the working conditions improvement of units. The inventions rising, rationalization and technical renovation movement of various scientific and technical officers and workers for self-renovating the working condition has contributed significantly to the scientific and technical activity for labor protection, and supported the labors' health protection.

During 2002-2003, OSH Institutes, universities, OSH centers in over the country conducted many programs, studies and scientific

projects at different levels. The scientific researches mainly focused on health promotion at workplaces, prevention of silicosis, applying new technique, development and supplementing occupational standards, evaluation and improvement of working environment and working conditions.

All those attempts and achievements have partially made the scientific and technical activity for labor protection develop. They have also recruited a various number of scientists, technicians and workers to study and apply modern scientific and technical results in labor protection that have contributed to the assurance of and protection for labors' safety and health.

### 4.3 OSH training, education activities

#### 4.3.1 OSH education activities

Before 2000, the educating of OSH activity in university, higher school and vocation school has implemented by the textbook, which was wrote in 1978. Almost education institutes taught the content of OSH on going to joined with main subjects, some technical universities such as mining university, construction university have a special subject of OSH. Vocation schools also taught the OSH content on going to joined with practising subjects.

After the Prime Minister promulgated the instruction on Strengthening OSH Activity in New Circumstances in 1998, Ministry of Education has evaluated the program, method of teaching the OSH content on education institutes, then to supply concrete guidance for new textbooks of OSH. On 2000, the new textbook has wrote including the contents: outline of labor protection; legal and international Convention; occupational safety and occupational health; fire fighting prevention and OSH practice activities at enterprise level. Base on this textbook, the education

institutes has compiled and developed the other materials more deeply depend on required of each speciality.

Nowaday, Technical Universities, vocation school have a special subject of OSH, to arranging from 22.5 hours to 45 hours for study., the other education institutes have not special subject of OSH, arranging for join with other technical subjects, which have required on OSH.

In the northern of Vietnam, the Labour Protection Department under Vietnam's Trade Union College will be responsible to educate labour protection engineers and establish training courses for trade union's staff, In the 1993-1994 school-year, with the State's approval, the very first students who were to study in the faculty of labour protection engineering was recruited to the University of Trade-Union. In the southern, the Labour Protection Department under the Ton Duc Thang Technology University also will be educate labour protection engineers.

### 4.3.2 OSH training activities

Under the Law, employers must provide training, guidance for workers of regulations and ways to work safety and hygienically, and inform them of accident risks that each worker should take precaution during their work, Ministries, Provincial Department of Labour, Invalids and Social Affairs (DOLISA) and Corporations shall hold training courses of OSH for the employers. Reality, The OSH training activities for employees was provided by safety and health institutes, local health center and manpower resource training center under the corporations. Until 2004, in Vietnam have a specific OSH training institute under the Bureau of SafeWork (Ministry of Labor, Invalid and Social Affairs). This center is assigned by Ministry of Labor to take developing the OSH training documents, programs

and carrying the OSH training courses for employers and employees.

Training have only well-implemented by large state enterprises and joint-ventured enterprises in recent years. The training provided by these enterprises have enough content, materials and are delivered by qualified and experienced trainers. Nearly 100% of workers have been provided such training. However, training for workers has not been implemented moderately in almost all small and medium-sized enterprises (SMEs), especially private ones. In these kinds of enterprises, workers, who have not gone under training, are still assigned to work which lead to many fatal occupational accidents. This situation is popular in construction enterprises, and small mechanic and chemical undertakings.

In period 1996-2003, training activities for local health representatives have also been directed and achieved significant results. The number of workers trained is continuously increased, in comparison with 1996, up to 2003 the figures have increased 26 folds (to 130,000 workers).

Table 13. Training on occupational health 1996-2003

| Content | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Total training courses | 194 | 164 | 224 | 295 | 314 | 815 | 631 | 1447 | 4084 |
| Participating enterprises | 1,464 | 2,478 | 1,737 | 3,642 | 2,768 | 4,587 | 3,738 | 6,491 | 26,905 |
| Number of trainees | 5,485 | 12,917 | 15831 | 19,076 | 31,424 | 56,000 | 64,970 | 130,579 | 336,282 |

From 2000 to 2004, the corporations under the Ministry of Industry has organized 1311 OSH training courses for 300.000 employees. The local trade union and other institutes under the Vietnam General Confederation of Labour (VGCL) has provided the OSH training courses for 2.4 million employees (Table 14).

Table 14. Number of employee has trained by local trade union and institutes under VGCL

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | Total |
|---|---|---|---|---|---|---|
| Number of Employee | 377,703 | 279,252 | 526,348 | 690,738 | 544,396 | 2,418,437 |

The contents of the training courses focused in occupational health, prevention of the occupational diseases, occupational safety, effects of the working environment on the workers' health. Through the training and propagation activities, the workers'awareness of the health and their self-prevention methods have been improved. These activities actively contributed to the improvement of the workers' health at enterprises.

### 4.4 Chemical safety management system and activities

The Chemical Safety Management system can be briefed as followed:

- The government has the united control on the chemical safety

- Ministry of Industry is assigned by Government to take administrative management on chemical safety. The Ministry of Industry is responsible for formulating legislation and policies on chemical safety and submitting them to competent authorities for promulgation, or by itself. Developing and managing the Chemical Safety Date System and set up and lead to establishing the Material Safety Data Sheet, the content and procedures for risk assessment, labeling for chemical products, the emergency plan. Ministry of Labor, Invalid and Social Affairs is responsible to promulgating the standards of equipment, PPEs are using on chemical activities.

- The limited specialty ministries are responsible for promulgating the detail list of dangerous chemicals and threshold

limit of chemicals; for carry out chemical safety inspection. For example, the Ministry of Agriculture is responsible to setting up the list of chemicals are pesticides, the Ministry of Health is responsible to setting up the list of chemicals are using on health services, food etc.

The chemical industry in Vietnam is still developing at low level, almost of chemical products are the basic inorganic chemicals commonly used, some products using in agricultural sector and the products has made from rubber, plastic materials. Almost of chemical enterprises under the Ministry of Industry, those have about 30.000 employees, in which 25% are working in hard, toxicity condition.

Table 15. The output of chemicals in 2000

| Name of products | Output (in 2000 year) |
|---|---|
| Phosphate fertilizer | 1.126 million ton |
| NPK | 886.000 ton |
| Urea | 75.000 ton |
| Pesticides | 14.200 ton |
| Rubber tyre for bicycle | 14.3 million unit |
| Rubber tyre for car | 3.828 million unit |
| Cell | 262.8 million unit |
| Battery | 500.400 KW/h |
| Detergents, soap | 86.062 ton |

The technology of chemical industry in Vietnam has been used for decades, technology for producing fertilizer, pesticide, basic chemicals and commonly used were almost moved from Russia and China, some from Korea and Taiwan. Technology for producing the detergents is present time, Technology for producing paint wax-tree is very backward, and the paint wax-tree almost is emulsion and solvent organic, so very toxic and pollutant. The result of a survey carried out by Ministry of Industry, situation of technology of

chemical industry is follow:

+ Backward, used from 60s and 70s: 50%
+ Used from 80s and 90s: 42%
+ Present time: 8%

Because of chemicals produced are limits, Vietnam have to imported many chemicals for production, most of them has imported for producing the plastic goods, detergents, battery, paint wax-tree, insecticides and the additive materials for shoes, leather and textile industry.

Table 16. Chemicals Imported by USD (Unit: million USD)

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Chemical (not including oil and fertilizer) | 275.7 | 322.4 | 426.4 | 529.0 | 682.9 |
| Insecticides | 143.5 | 102.8 | 116.5 | 116.1 | 210.1 |

The dangerous gases usually meet at workplaces are CO, $SO_2$, $Cl_2$, $NO_2$, $NH_3$, HF and organic solvent VOC, Formaldehyde, Clo organic compound. There were many occupational diseases in chemical, plastic and paper industry. From 1996 to 2000, there were 23 victims by occupational accidents; there is a CO poisoning, a burned by $H_2SO_4$ and one exploded by chemical.

There are two enterprises producing $H_2SO_4$ with output is 20.000ton/year and 10.000ton/year; three enterprises producing Clo with output is 21.000ton/year, 7000ton/year and 1,050ton/year; one enterprise producing $NH_3$ with output is 72.000ton/year and one enterprise producing carbonate, usually have 3m3 of Methyl Isocyanate (it's the chemical caused thousand deaths in Bhopal disaster). From establishing until now, there is no serious accident in these enterprises. However, with so much of mass of dangerous chemicals usually at workplace, there is a large risk to employees, community and environment. Especially, there is only one enterprise

have an emergency plan to annul the breakdown or accidents. Almost of chemical enterprises lack of information of risk, toxicity of chemicals is using.

## 5. Working condition situation

Table 17. The result of working environment measuring period 2000-2004

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 5year average |
|---|---|---|---|---|---|---|
| No of Es | 2500 | 2400 | 2606 | 2277 | 1986 | |
| Toxicant factors | Percent of exceeding the allowed standards | | | | | |
| Dust | 32.6 (6344) | 24.7 (15847) | 20.7 (15703) | 23.9 (14147) | 17.5 (15069) | 23.88 |
| Noise | 21.2 (33059) | 25.7 (19349) | 31 (23129) | 27.6 (19408) | 28.2 (27738) | 26.74 |
| Lighting | 10.4 (34864) | 11.2 (25369) | 10.8 (29104) | 18 (24543) | 17.1 (37355) | 13.50 |
| Toxic gas | 12.1 (9294) | 34.8 (18821) | 13.4 (13802) | 13.5 (9643) | 11.9 (15933) | 17.14 |
| Macro Climate | 32 (110603) | 27.9 (84978) | 23.9 (91126) | 22.8 (76577) | 17.6 (103802) | 24.84 |
| Vibration | - | 23.3 (1916) | 34.7 (2870) | 22.5 (2259) | 14.5 (1042) | 23.75 |
| Radio Active | - | 6.1 (5586) | 6.8 (6329) | 10.3 (1493) | 3.8 (9797) | 6.75 |
| Total | 25.3 (171866) | 24.9 (179480) | 21.2 (148070) | 22 (195667) | 18.2 (889247) | - |

In general, the working environment has been improved. The measured samples exceeding the allowed standards have been decreased from 28.4% to 23.5% in the period of 1991-1995 and to 24.9% in 2000-2003. The annual measured samples of the environment has increased 6 folds in the period of 1996-2001, the measured samples of 2001-2003 was over 581.000. The toxic elements exceeding the allowed standards has been decreased of

which the high temperature decreased from 43% to 27.8%, dust from 45.3% to 23.1%, noise from 41% to 28.3%, and toxic gas from 27.3% to 26.4%. Heat and dust decreased 3%/year; noise and toxic gas decreased 1-2% every year.

The result of a survey on OSH carried out by MOLISA showed that 8% of the surveyed enterprises were in very bad situations, 15% in bad situations, 50%in medium situations and only 20% met the requirements. Consequently, 80% of strikes in the present time are because of working conditions, working overtime and the low payment.

## 6. Occupational accident and disease

### 6.1 Occupational accidents

Occupational accidents which resulted in work stoppage of the victim for one day and more shall be recorded and periodically reported. If no accidents occur during the reporting period, the undertaking must always submit written report saying "no occupational accidents".

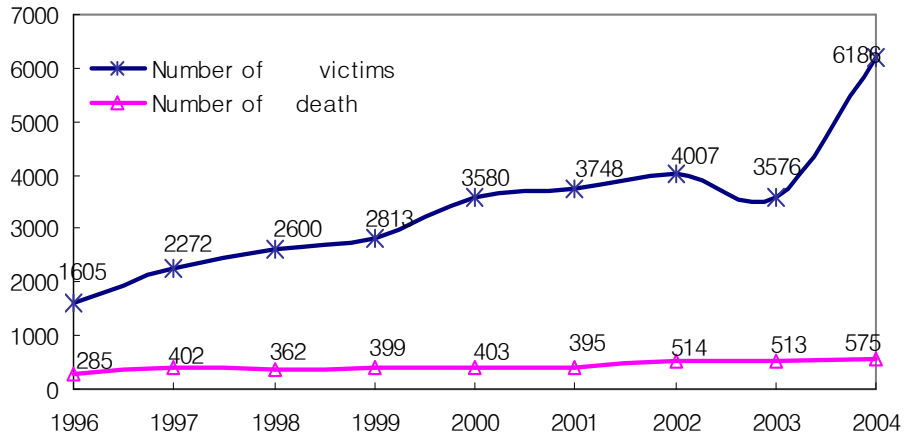


Figure 15. The trend of industrial accident victims and deaths.

As is show in Figure 15, the number of industrial accident victims has been increasing from 1996 to 2004 with exception of one year 2003. The number of deaths caused by industrial accidents also increased from 1996 to 2004, exception of the year 2001. Statistical figures mentioned above do not express all cases of occupational accidents and diseases. Because only 10% of whole enterprises make occupational accident and disease notification regularly to the relevant state organizations. Most of occupational accidents and diseases in agriculture and the private sector are notified or reported.

By the result of a survey, the occupational accident rate was 0.55 %, 3.937 % and 6.54 % in textile, construction and coal mining, respectively on period 1991-1995, the occupational accident rate was 2.05% in industry on period 1996-2000. Deaths by industrial accidents are particularly common in industries with high occupational risk as construction, mining and other service industries as installation, repair and usage of electricity, usage of equipments and machineries with strict requires on OSH.

Table 18. The industries has occurred many deaths caused by industrial accident on period of 1996-2004

| Industrial | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|
| Construction | 46 | 91 | 61 | 51 | 52 | 51 | 69 | 96 | 99 |
| Installation, repair and usage of electricity | 52 | 56 | 51 | 53 | 55 | 60 | 75 | 71 | 82 |
| Mining | 31 | 55 | 59 | 54 | 40 | 36 | 40 | 3 | 39 |
| Usage of equipments and machineries with strict requires on OSH | 26 | 15 | 27 | 26 | 26 | 33 | 24 | 12 | 23 |

## 6.2 Occupational diseases

### 6.2.1 Occupational diseases in general

According to the figures of the Ministry of Health, the accumulated number December of 2003 of occupational diseases is 19.153. The occupational diseases of pulmonary tuberculosis are highest (76.81%). In 2003, the cases being diagnosis of contracting the occupational diseases are 4,068 and 552 cases are covered by the social insurance fund.

Table 19. Occupational diseases group under medical survey 1976-2003

| Occupational Diseases | 1976-1990 | 1991-1995 | 1996-2000 | 2001-2003 | Total | Rate(%) |
|---|---|---|---|---|---|---|
| Silicosis and bronchus | 4,905 | 2,161 | 5,124 | 2,521 | 14,711 | 76.81 |
| Toxic occupational diseases | 65 | 44 | 490 | 199 | 691 | 3.61 |
| Diseases due to physical element | 527 | 315 | 1,531 | 879 | 3,124 | 16.31 |
| Occupational skin diseases | | 20 | 200 | 3 | 223 | 1.64 |
| Occupational infected diseases | | 13 | 79 | 312 | 404 | 2.11 |
| Total | 5,497 | 2,553 | 7,424 | 3,914 | 19,153 | 100 |

### 6.2.2 Occupational silicosis

Up to December, 2003, there have been 14,711 cases, accounting for 76.81%. In 2003, of 23,708 workers being health checked who work in dust environment, there have been 1,410 suspected cases and 405 have gone under examination, of which 125 cases received the allowance and the other 122 cases were provided with the social insurance. Besides the occupational silicosis, there have also been the occupational pneumoconiosis due to asbestos, chronic occupational sore throat and pneumoconiosis due to cotton. In general, the contracting of the occupational diseases in the casting and mechanic sector is highest (13%) and ranking the second (9.5%) are the workers in coal mining and the third are

quarries and aggregates (6.5%).

### 6.2.3 Chemicals poisoning

Since 1996, there have been only 4 cases checked and examined to be chemical poisoning due to lead, TNT, nicotine and pesticides. The statistical figures are as follows:

Table 20. Chemical poisoning in 1997-2003

| Occupational diseases | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|
| Lead poisoning | 5 | 30 | 26 | 87 | 5 | 64 | - |
| TNT poisoning | 1 | - | 34 | 12 | 31 | 8 | 11 |
| Nicotine poisoning | - | 46 | 32 | 43 | 56 | 64 | - |
| Pesticides poisoning | - | - | 36 | 178 | - | - | - |

However, manganic and arsenic poisoning have not been examined yet.

### 6.2.4 Pesticides poisoning

Agrochemical poisoning cases, which need to be treated in hospital, have not been reduced over the last year. However, fatal cases due to this reason have been lower. Of these cases, pesticides poisoning accounted for over 30%.

Table 21. Agrichemicals poisoning at workplaces in 1997-2003 in provinces

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|---|
| Total cases | 748 | 489 | 359 | 196 | 271 | 290 | 282 |
| Fatal cases | 18 | 2 | 4 | 0 | 0 | 2 | 0 |

The number of occupational disease patients tends to increase. By the Ministry of Health the real number of silicosis patients are 8-fold, compared with the mentioned above number.

## 7. Workers Compensation in Vietnam

### 7.1 Workers compensation

a. Regulation :The Socialistic Government of Vietnam has legislation of workers compensation for occupational injuries and diseases under the Labour Code and its related decrees and circulars. The Law well defines the responsibility of employers for medical expense of treatment, payment for salary for when injured worker are being treated, and compensation for severely disabled persons and relatives of dead workers during work. The Labour Code has been amended to clarify employers'responsibility for compensation on disability for 5% to 80% of body function loss in 2003.

b. Benefits by employer: An employer has a responsibility to compensate to workers who have suffered from occupational injuries and diseases. The benefits are medical expense, salary during treatment, compensation for disability and compensation for relative of death caused by occupational accidents and illness. The employers also must be responsible in accordance with laws for work accidents occurred by his/her fault in addition to the basic compensation. The employers has to pay all expense during treatment causes by occupational reason and have to pay a regular salary to a worker while he cannot work because of treatment.

c. Disability benefits :The employer also has a responsibility for compensation to the worker whose ability to work has been reduced by from 5 per cent to below 81 per cent due to work accident or occupational disease. To pay at least an amount equivalent to 1.5 month's wage and allowance (if available) to the worker whose working ability has been reduced from 5% to 10%, if his/her working ability has been reduced from over 10% to under 81%, then for each 1%, the compensation amount will be added 0.4 month salary and allowance (if available) in case of the death is not caused by his/her fault. Incase of the accident is caused by the fault of the worker, he/she shall have also been subsidized an amount at least equivalent 40% of the regulated compensation level according to the above correspondent ratio.

d. Survivors' benefits :The employer shall pay compensation at least equal to 30 month' wages and additional payment to wage, if any, to employee whose ability to work has been reduced by 81 per cent or more, or to the relatives of the worker who has died as a result of work accident or occupational disease which not caused by the fault of his/her fault, worker or his/her relatives shall still be granted an allowance at least equal to 12 months' wage and additional payment to wage, if any.

## 7.2 Social Security

Workers are eligible to engage to the Social Security. Employers contribute at the rate of 15% of the total wages paid to workers who are under social security coverage; of which 10% shall go for retirement benefits, survivors'benefits and funeral expenses, and 5% for sickness, maternity and benefits for occupational accidents and occupational diseases. The contribution of worker is at the rate of 5% of his monthly wages for retirement benefits, survivors' benefits and funeral expenses.

Workers whose ability to work is reduced more than 5% because of occupational accidents and disease are entitled to disability benefit by the social security fund. Its is a part of the fund from the 100% contribution of employers at the rate of 5% of total wages.

The Social Security covered 3,842,080 in 2002. The payment from Social Security was 7,091 billion VND in 2000. Compensation for workers who had disability more than 5% after treatment and died because of occupational injuries and diseases was 4,196 million VND, which consisted of 1,560 million VND for survivors' benefit and 2,637 million VND for disability benefit. The proportion of occupational compensation to all expense of the social security fund was 0.05% in 2000.

The medical insurance fund is formed the contributions at the rate of 2% of the total wages of paid workers by employers and at the rate of 1% of their wages by workers. The medical fund is merged into the social security fund since 2003. The medical insurance covers only workers, who contribute to the fund, within the limitation by the guideline of medical treatment issued by the

Ministry of Health.

# Ⅳ. Evaluation and Comparison of the OSH activities between Korean and Vietnam

## 1. Evaluation on the OSH activities of Korea and Vietnam

### 1.1 The OSH activities of Korea

The history of OSH system in Korea started since 1950s with Labor Standard Act promulgated on 1953 that stated specific standards for machines, tools, facilities and working environment. The Industrial Safety and Health Law that became the current legal frame work has been established in 1981. It was fully revised in 1990 to meet worker's higher demand for the strong intervention for OSH enforcement by government during late of 1980s. It is apparent that Korean OSH legal, institutional and organizational systems have settled down. Korea has developed their own characteristics for the OSH management systems, the workplace monitoring institutions and other OSH practices and institutions. Korean OSH systems have initiated mainly by Government and OSH professionals.

A large amount of fund for safety and health activities has been prepared from the Industrial Accident Compensation Insurance Fund. Recently a great effort for OSH activities has started in 1990s. Consequently, Korea has decreased the industrial accident rates and deaths by industrial accident rates, some occupational disease was checked, has improved the working condition and protected and improved the workers'health. With that results, Korea has met demands related with working environment and labor relation of OECD, and Korea is ILO'partner on support for the third countries on OSH activities. For more detail, the great achievements

of industrial accident prevention activities and working condition improvement on period of industrialization in Korea may be summarise on main points, as following:

- The first and most important achievement is the industrial accident rates and deaths by industrial accident rates was gradually reduced; has declined of classical occupational diseases such as poisoning and pneumoconiosis.

- The second achievement is the OSH legal, institution and organization was established systematization and perfectly. OSH activities was socialization. Besides the agencies specialized on OSH field, the other agencies has together carried out the OSH activities as the universities, hospitals carried out OSH researching, training activities, the specialists from other fields has participated in developing the OSH policies, standards and measures to prevent the industrial accidents and diseases, ensured safety and health for workers.

- The third achievement is the OSH agencies in Korea has correctly selected the industries, addresses existing the risk, harmful factors and occurred serious accidents to carried out the accident prevention activities efficiently as prevention activities on construction, pneumoconiosis prevention program...

- The fourth, has developed the policy to linked the quality of products with OSH standards and working environment as the Certification of Occupational Safety and Health Management System (KOSHA 18001), "S"mark safety certification programs. Consequently, develops and establishes the safe enterprises community, a long with to wake up in increasing the competitive power of products in the World market.

However, in consideration of all these facts it is not difficult to conclude that there exists limitations in preventive safety management against industrial accidents in Korea, including:

- The number of severely disabled workers has been growing

steadily during past 20 years or has at least not shown any improvement from the level a decade ago despite an overall decrease in the industrial cases and industrial accidents rates. The number of deaths has been increasing continuously to date. This shows that safety management of worksites has not kept up with the progress of industrialization which has resulted in the increase of projects with high risk profile such as the construction and facilities involving the use of heavy machineries.

- The Labor policy until the mid-1980s stress economic development, minimized industrial disputes, and promoted the timely supply of skilled labor for the national's industries. Improvement of the work environment did not receive attention from policy - makers and employees even after the industrial Safety and Health Act was established in 1981. Consequently, the rapid industrialization of South Korea'economy may have caused unforeseen consequence for the Korean society and people, including occupational safety and health problems. A recent example of unforeseen consequence is carbon disulfide poisoning. A viscose rayon factory, which exposed workers to carbon disulfide poisoning among employed workers. The number of diseases and impact on workers and industry had a huge social impact Park J, Kim Y (1998) The history of occupational health service in Korea. Ind Health 36, 393-401.

- Almost preventive safety activities has taken by KOSHA and other related organizations has been using the budgets from the Industrial Accident Compensation Insurance Fund... Meanwhile, the proportion of insured workers per economic active population always less than 50%, but, although the number of workers was insured increased during period of industrialization, so more than 50% of economic active population did not receive attention from industrial safety and health management system.

- The manpower for inspection and guidance on OSH was in striking insufficiency. OSH inspectors has inspected an average of

5% of total enterprises a year, this means that Korea needs 20 years to inspect all enterprises one time.

### 1.2 Evaluation on the Vietnam' OSH activities

On half of century over, after the August Revolution in 1945, the degree of labor policy was promulgated in 1947, which included some regulations on labor protection. Through the period of Vietnam War, the Government always to pay attention to developing the OSH activities for employees. Vietnam has carried out the progress industrialization since the year 1986, especially during 1990s, the occupational accidents prevention activities was always respected and paid great attention by Government, other related organization, employers and employees. Therefore, has gained some achievements, to take part in improvement of working condition and prevention of occupational accidents and diseases in some industrial branches and enterprises, as including:

- In the year 1991, the Government Council issued the Labour Protection Ordinance, after that the National Assembly issued the Labour Code, which, apart from the ninth chapter specialized on the occupational health and safety, includes other articles related to the labor protection In 1994. Thus, so far the main legal documents related to the labor protection issued by the government has been adopted in Vietnam. Coming along with these major legal documents, during the last decades, the Government, some relevant ministries and the Vietnam General Confederation of Labour issued series of decrees, decisions, circulars and guidance on labor protection. A system of standards on labor protection at the governmental and ministerial levels also has been released and is under implementation.

- Vietnamese management and inspection system on labor protection despite some shortcomings have been improved gradually, which clarifies the positions and the roles, the responsibilities and

the rights of relevant organizations to contribute greatly to the development of labor protection in Vietnam.

- Responsibilities and rights of employers on labor protection have been regulated relatively enough in legal documents and have been instructed to implement at early stages.

- The organization and mobilization of Vietnamese people during the past time have achieved good results that have significantly contributed to the labor safety assurance and health protection.

- The scientific and technical research and application of labor protection during past years have strongly developed and gained considerable achievements that actively contribute to the working condition improvement and occupational accident and disease prevention for Vietnamese labors.

- The information, training activities on OSH was implemented have salient achievements, to take part in increase the awareness, responsibility and knowledge of safety manager, employers and employees. Especially, the National Week on Occupational Safety and Health, Preventing Fire and Explosion was established since 1999.

However, on the first period of industrialization progress, with the changes of economic structure, labor structure and technology, management method rapidly, so there exists limitations in preventive safety management against industrial accidents and diseases in Vietnam, including:

- Results from the examinations and analysis of figures show that the working conditions in many production branches, especially in craft production units and households, are bad, and even worse in some places. Many buildings, workshops and machineries are so out of date and damaged that may cause occupational accidents. The obsolete technology and manual work still are widely spread in many production branches. The working environment in many places is seriously polluted with very high concentrations of toxic

substances and hazardous elements which multi-fold surpasses the safety limit;

- The situation of occupational accidents and diseases is still serious, even sometime it worsens in some places. In many units and branches, the health of laborers is seriously decreasing, especially in places where workers are suffering strenuous and continued overtime works. During renovation years, a lot of joint ventures, private-capitalism enterprises, crafts production households and individuals have mushroomed thanks to the application of the market mechanism and the policy on opening doors to foreign investment. The working conditions, occupational accidents and diseases in this sector are getting more complicated. It is just a mixture of bad and good elements because of the coexistence of latest and obsolete technologies, machineries; the operation of units who always strictly obey laws and regulations and a considerable number who care for their profits only. Especially, there are many units forcing their employees working in seriously unsafe conditions without labor protection. Obviously, during the renovation period, new problems of labor protection are arising that need to be tackled.

- There have been violations in the implementation of labor protection policies. There are not enough provisions of personal protection equipments (PPEs) and allowances for workers suffering from toxic works as regulated in laws. In some places, the PPEs provided are of bad quality, incorrect designs and poor quantity. In some production branches, joint ventures and foreign invested companies, private enterprises, workers are forced to work with high intensity, speed for long time a day. Especially at some enterprises in textiles, shoes, seafood processing and electronic industry, they must work for 12-14 hours per day throughout the month.

- The occupational accidents and diseases statistic system is working inefficiently. Every year, only 10% of total enterprises has

implemented on making statistics and report occupational accidents (except fatal accidents).The health checking for discovering of the new occupational disease cases was did not enough, that work only has implemented in large enterprises have capacity of finances. Therefore, there large number of workers, which exposes with high occupational risk at workplaces was not received health checking for discovering of the occupational diseases for treatment and watch for where have high risk and did not know exactly where many accidents occurred for make the policies and measure to prevent.

- The organization and management system of labor protection has not been built and developed to respond requirements of the labor production activities .The system of labor protection officers is weak in quantity and quality as well as unstable. These officers have not been fully cared for and often transferred.

- There has been an absence of investment in labor protection. In Vietnam, there have been not any stable producers specialized in manufacturing high quality PPEs and labor protection equipments.

**The reasons for the negative impacts :** There are several reasons. Main reasons are insufficient awareness of officials, authorities, employers and employees on safety and health risks caused by industrialization and modernization. The implementation of OSH regulations, standards, rules, safety procedures is still poor on construction, in the use of electricity, in mining, in operation of machines and equipment. Especially non -state-owned small and medium enterprises need urgent assistance for improvements. It is getting popular for farmers to use different kinds of chemicals and electrical instruments without having appropriate training on OSH. Their use leads to accidents and exposure to toxic materials and substances. Inspection activities by authorities are still very limited.

## 2. Comparison between Korea and Vietnam

The results of reviewing the economic development, industrialization process and OSH legal, policies of Korea and Vietnam, showed that there are many features the same between two countries.

Firstly, Korea and Vietnam has undertaken economic development from poor agricultural country and was ravaged of war, but growth rate increased very high. Korea has undertake economic development since 1962, after the Korea War (1951-1953) 9 years, with workers engaged in the agricultural, forestry and fishery sectors accounted for 63% of total labor force in 1960, and the average growth rate of GDP is 8,2% on period from 1960 to 1995. Vietnam has undertake economic reform and development since 1986, after the Vietnam War ended (in 1975) 11 years, with workers engaged in the agricultural, forestry and fishery sectors accounted for 72% of total labor force in 1991, and the average growth rate of GDP is 7,5% in the period from 1990-2003.

Secondly, to about industrialization process, Korea's economic growth was initially led by labor-intensive light industries, especially textiles. The light industries were steadily replaced by the heavy and chemical industries in 1970s that have come to account for over half of nation's total manufacturing output. The share of primary industries in overall industrial structure decreased steadily from 31.5 percent in 1970, to 15.7 percent in 1980, and further to 5 percent in 2002, the share of manufacturing industries increased from 14.7 percent in 1970, to 36.0 percent in 2002. The share of the service industries stood at 47.5 percent in 2002. The principal industries are shipbuilding, auto manufacturing industries, petrochemical complexes, refineries, cement, food processing, plywood, chemical fertilizers, footwear, clothing, ceramics, glass, nonferrous metals and farm implements, construction.

The process of industrialization in Vietnam also started from light industries, including the textiles, footwear and food processing, now have on going to reached their peak, with high competitive power and products is exporting to almost big market in the world. According to the socio - economic development strategy to 2010 and orientation toward 2020, Vietnam continue to developing the branches of processing the agricultural, forestry and fishery products, garment, shoes industry, electron and producing the mechanical products, and consume goods. Developing on chosen some heavy industrial factories, as Petroleum and gas complex, refineries, mechanical manufactures, metallurgy, basic chemical, fertilizer and materials for construction. With target as the proportion of agriculture, forestry and fishery, industrial and service on GDP shall be 16-17%, 40-41% and 42-43% in 2010, respectively.

Thirdly, on as for labor structure, the proportion of workers on manufacture industry and construction is high, most of worker on small and medium scaled enterprises. In Korea, during 1982 to 1993, the proportion of manufactures and construction was more than 70%, especially, on period of 1985~1990, the proportion is higher than 80%; The small scaled enterprises is 98.1%, which employ 85,3% of employed workers. In Viet nam, The most employees are used in manufacturing and construction now there are 49% and 16.6% of total employees in enterprises sector, respectively; the small scaled enterprises is 81%, which employ more than 90% of employed workers.

Fourthly, South Korea and Vietnam are very densely populated (479 peoples/Km2as the year 2002 in Korea, 230 persons/Km2 as the year 1999 in Vietnam) South Korea and Vietnam has relatively young population and population growth at high level on the period of industrialization(population grow by an annual rate of 3 percent during the 1960s, and 2 percent during 1970 in Korea; The average

annual growth rate of population was 2.1 and 1.7%/year in the periods 1979-1989 and 1989-1999 respectively in Vietnam);the proportion of working age, economic active population are large number, the literacy rate is very high, Korea is 99% in 2002, Vietnam is 93% in 2003).

Fifthly, as regards the OSH problems, in the first stage industrialization of Korea and Vietnam, the number of victims and deaths by industrial accident was increased, particularly common in construction, manufacturing sectors. The diseases commonly was pneumoconiosis and diseases due to physical element as hearing loss, pneumoconiosis is 24%, 77% and hearing loss is 13%, 16% in Korea and Vietnam respectively.

From the features the same between Korea and Vietnam was analyzed above, it is not difficult to conclude that some OSH problems was occurred in Korea also may be occur in Vietnam and there are some measures to decline and prevent the industrial accident was implemented in Korea could be apply for Vietnam in next coming time.

Table 22. Comparison of the Features of Korea and Vietnam

| Features | Korea | Viet nam |
|---|---|---|
| *1. Population* | 47,640,000 | 80,000,000 |
| *2. The process of industrialization* | Since 1960s | Since 1980s |
| *3. Average economic growth rate* | 8%from 1960s-1990s. | 7,5% from 1990 to 2003 |
| *4. The proportion of industry, and services and agricultural in GDP* | 33,6%, 42%, 24,5% in 1975<br>40,2%, 54,6%, 5,2% in 2001 | 38%, 29%, 33% in 1986<br>22%, 40%, 38% in 2003 |
| *5. The economically active population* | 8.23 million in 1963<br>22.9 million in 2002 | 40 million in 2003 |
| *6. Number of insured workers* | in 1973:1,319,000<br>in 1991: 7,922,000<br>in 2003: 10,599,000 | In 2003: 5,175,092<br>(Number of workers at enterprises) |
| *7. The main composition of the number of insured workers* | Manufactures, construction | Manufactures, construction |

## 3. Challenging to ensuring safety and health for workers in Vietnam

- The continuous economic changes in Vietnam, together with the globalize, with the appearance of new technologies, machines, and materials, has brought multi- faceted impacts to safety and health of workers. Dangerous and harmful substances that are difficult to control can pollute working environments. Some imported technologies and machines are not suitable for Vietnamese workers. When Vietnam becoming a member of WTO in short coming time, the enterprises will be at higher competitive level, so employees shall be facing with psychological stress caused by hierarchical work organization, long working hours, hard work and very competitive society, which is newly appearing issue.

- With the rapid industrialization, an increasing number of enterprises, especially, those of small- and medium sized have attracted hundreds of thousands of workers from countryside. They have not been trained on OSH and are facing many work-related

safety and health risks that they were not used to. The private enterprises were mainly formed in the time of economic reform and most of them have only limited capital, backward and unsafe technologies. The government management and control systems on OSH were insufficient. As a result, many workers from these sectors were working in the most disadvantageous conditions.

- Based on the economic development plan of Vietnam to 2010 and 2020, the basic industrials are mining, construction and construction materials, manufactures, basic chemical, textiles, shoe and food processing. Therefore, pneumoconiosis was major issue in occupational health, but continue important problem today and next coming time because of increase to develop on mining, construction materials industry; occupational cancer, asthma, neurological diseases as well as heavy metal and organic solvent poisoning will be important problems because of develop the heavy, chemical industry.

## 4. Experiences and implications for Vietnam

### 4.1 Experiences from Korea

Through on reviewing and analyzing the OSH activities on period of industrialization in Korea and the achievements, even the limitation on OSH. There are some experiences lessons have been drawn out for Vietnam to refer, as following:

1) Timely Setting up the OSH legal system are enough, and have the contents of all responsibilities of Government, organizations and employers and employees. Especially, setting up the OSH standards must be received respect and attention from policy-maker.

2) Because of the capital invested from general account of State was vary limited, especially, on the first period of industrialization, almost resources was invested to increase the growth rates. Therefore, need to make the policy for enterprises must be invest or pay the expenditures of researching, educating,

training and other preventive activities on occupational safety and health. For example, Established the Industrial Accident Compensation Insurance at the time start to carry out the industrialization in Korea has provided the fund to finance for Industrial Accident Prevention Projects. Nowadays, almost expenses necessary for activities related to accident and disease prevention and the operation the OSH agencies were getting from Industrial Accident Compensation Insurance.

3) Developing the policies for all organizations, institution and individuals shall be participate on accidents and disease prevention activities such as the experts, universities, hospitals and institutes participates to develop the policies, standards and OSH researching, training; the universities, hospitals and institutes.

4) Carry out the accidents and disease prevention programs to according with situation of occupational accidents and disease for each period of industrialization and focus on the priority industries, which have high occupational risk to implementing the special projects.

### 4.2 Implications for Vietnam

From the challenges on occupational safety and health in Vietnam on next coming time, and the experiences from Korea on industrial accidents prevention activities on period of industrialization, This Thesis would like to suggest some implications on developing the policies, setting up the organizations and implementation the occupational accidents and disease prevention activities in Vietnam, as following:

1) A timely reform, supplementary and new develop the regulations on OSH to meet requirements of industrialization progress, especially, the OSH management standard system for each industrial branch and kind of machines, tools and facilities; setting up the guidelines on OSH management for industrial branches.

Usually carry out to inspect and supervise the implementation of OSH regulations by employers at workplaces.

2) Carry out to integrate the OSH management agencies, institutes and technical consultant units under controlled by only one management body is the Ministry of Labor, Invalid and Social Affairs to minimize the management expense, and to unify the targets on OSH activities, to decline the coincidence activities.

3) It is necessary to set up a National Program on Occupational safety and health, in which have the Action Plan of industrial accidents and diseases prevention on each period and priority on industries with high occupational risk as mining, construction, chemical industry. Especially on small scaled enterprises and household.

4) Establishing the Industrial Accident Compensation Insurance Fund in Vietnam. The benefits of employees compensation are well stipulated in the Labor Code and its related act. Employers could be allowed to join the private insurance companies. However, in such case, employee's right to get compensation would not be guaranteed because small enterprises would be difficult to join the insurance. Thus, an insurance system supervised by Ministry of Labour, Invalid and social Affairs are necessary. It should be supported by an Act, the scope of coverage should be increased step by step. From the beginning, the insurance can start from some state own corporations with high occupational risk.

5) Early studying and allowing some occupational diseases related to new working condition, such as work requiring repetitive movement over a long period of time on textile, shoe and electronic industry, work exposes to chemical substances.

6) Carry out socialization of the occupational accidents prevention activities. Developing the policy for components of society takes part in investment and development on field of OSH. Such as the universities, hospitals and other institutions shall be carrying out researches, training and educating on OSH, private

sector and individuals shall be develop the technical, legal consultant and services.

7) Improving the international cooperation in OSH. To make use of supports from International Organizations and developed countries on OSH to learn the experiences of developing policy, management, research, training and develop training materials, information and propaganda activities, also supports of finance for projects of OSH.

# Ⅴ. Conclusion

In consideration of all results written and analyzed above, it may be concluded like following several points:

First, the industrialization progress in Korea and Vietnam have several same features in that of rapid industrialization, industrial structure changes and economic development. In the first stage of industrialization in the two countries, the number of industrial accident victims were increased in the construction, mining and manufacturing industry. From this trend, it can be assumed that some OSH problems occurred in Korea also may be occurred in Vietnam. So the measures implemented to decrease and prevent the industrial accidents in Korea can be apply to OSH system of Vietnam in the future.

Second, The activities on occupational accidents and diseases prevention in Korea have dramatically developed both quantity and quality, in parallel the economic growth of Korea. With industrialization from the middle 1960s, many workers were exposed to hazardous working environment and suffered from occupational accidents and diseases. The attention on OSH in the 1960s and 1970s was expressed on compensation policies for workers, who were disabled by occupational accidents and diseases. Improving work conditions was not a high priority until the 1980s, when the economy was more developed the policies supported worker's health protection. The number of industrial accident victims, deaths by industrial accidents, which was happened seriously in construction, mining, manufacturing, heavy chemical industry, had a significant impact to the Korean society. (Korea) Government took many actions to improve working condition through regulation, enforcement, support to academia, raising occupational accidents and

diseases prevention fund and establishing OSH agencies, institutes and organizations. Many occupational accidents and diseases prevention projects had established and implemented. As a consequence, the working condition in Korea has been improved. Recently, has decline of classical occupational diseases, decrease of the industrial accident rate, deaths by industrial accidents rate. Several policies and activities have been referred for Vietnam, which were timely setting up the specific OSH legal system, the Industrial Accident Compensation Insurance that enforces enterprises to invest or pay to the occupational accidents and diseases prevention activities and concentrated monitoring to the high risky industries.

Third, during the industrialization periods, Government have been respecting and paying great attentions to prevent occupational accidents and diseases and to improve work conditions. Presently, The OSH legal system of Vietnam is so systematic that many occupational accidents and diseases prevention activities and programs can work to decrease the serious accidents and to improve the work conditions. the awareness of employers and employees are increased. However, there are many limitations too. Many production branches, especially craft production village and units/household business couldn't be improved for their work conditions, even some places become worse. the situation of occupational accident and diseases is still serious in some industries; they have violated implementing of OSH regulations and standards.

The rapid industrialization progress is continued in Vietnam, with stressing developing construction, mining and heavy chemical industry as well as some light industries, which employ many workers. Vietnam shall be facing with challenges on ensuring safety and health for workers. Such as working environment can be polluted by dangerous and harmful chemical substances, occupational accidents and diseases occurring on industries with high

occupational risk as construction, mining, manufactures and heavy, chemical industry, machineries, tools, facilities are not suitable for Vietnamese workers. Consequently, Vietnam needs to make more effort on develop the measures to prevent the occupational accidents, diseases and improve working environment, in which have to learn as much as possible the experiences from advanced countries as Korea. There are some implications for Vietnam to refer. They are (1) A timely reform, supplementary and new develop the regulations on OSH to meet requirements of industrialization progress (2) Carry out to integrate the OSH management agencies, institutes and technical consultant units under controlled by only one management body (3) set up a National Program on Occupational safety and health (4) Establishing the Industrial Accident Compensation Insurance Fund (5) Early studying and allowing some occupational diseases related to new working condition (6) Carry out socialization of the occupational accidents prevention activities(7) Improving the international cooperation in OSH.

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# Abstract

## Korean OSH Legal, Institutional and Organizational Systems and It's Implication to Vietnam

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Industrialization progress in Korea and Vietnam have some features the same on rapid industrialization, changes of industrial structure, economic development and some OSH problems. Consequently, some OSH problems was occurred in Korea also may be occur in Vietnam and some measures to decline and prevent the industrial accident was implemented in Korea could be apply for Vietnam .There are some experiences lessons for Vietnam to refer, such as timely setting up the specific OSH legal system, establishing the policy for enterprises must be invest or pay the expenses of occupational accidents and diseases prevention activities, for all organizations, institutes shall be participate on develop the occupational accidents and diseases prevention activities, establishing the Industrial Accident Compensation Insurance, and focus on the priority industries, which have high occupational risk to implementing the special projects. There are some implications for Vietnam. They are (1)A timely develop the regulations on OSH to meet requirements of industrialization progress (2)Carry out to integrate the OSH management system under controlled by only one

management body (3)set up a National Program on Occupational safety and health (4) Establishing the Industrial Accident Compensation Insurance Fund (5) Early studying and allowing some occupational diseases related to new working condition (6)Carry out socialization of the occupational accidents prevention activities(7) Improving the international cooperation in OSH.

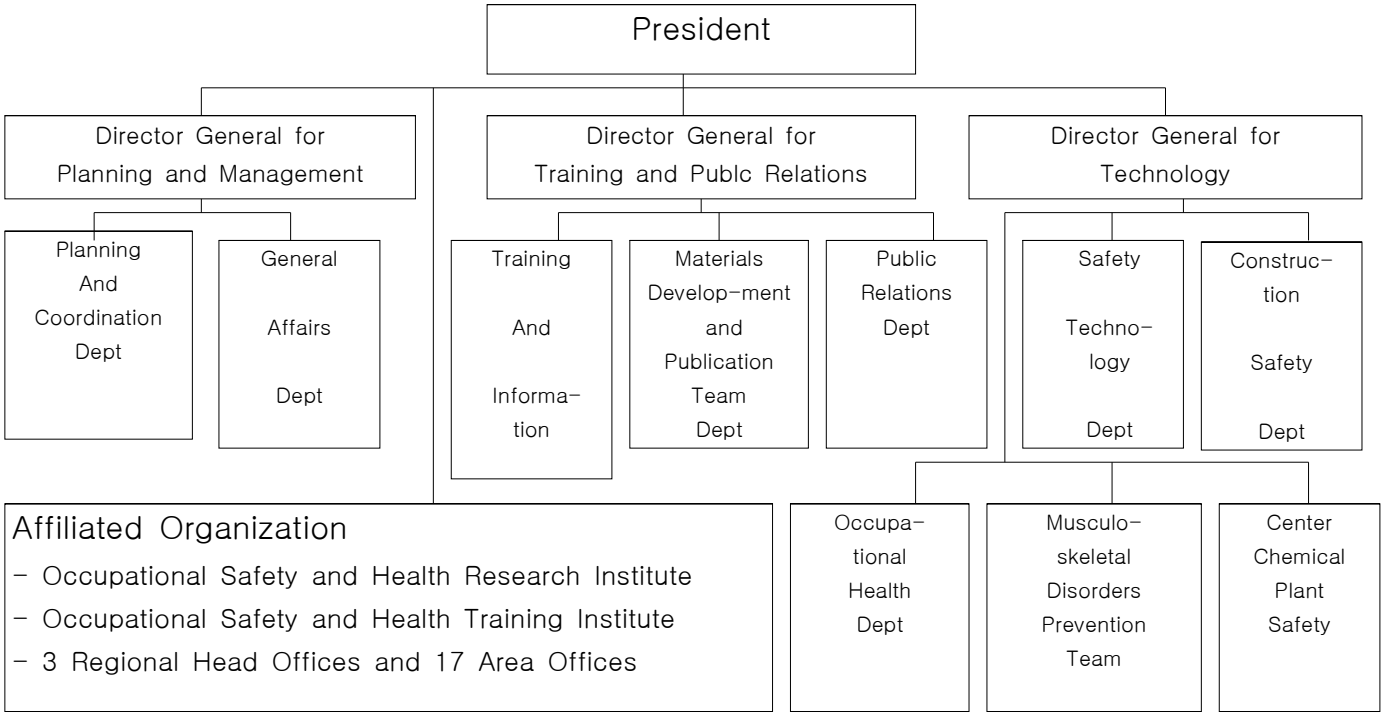


Figure 4. Korea Occupational Safety and Health Agency Chart.