

Review Article

# Recent Advances in Occupational Health Research in Korea

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**Abstract:** Korea has a short history in research on occupational health like as short history of industrialization. During last four decades, however, Korea has experienced what developed countries have experienced for more than a hundred year. Research on occupational health in Korea has also drastically developed. Since industrialization in 1970s, many workers were exposed to hazardous working environment and suffered from occupational accidents and diseases. The main research topics were pneumoconiosis, noise-induced hearing loss and some chemical poisoning. However, improving working condition was not the top priority until the late 1980s. Carbon disulfide poisoning gave a big impact to the society. It made the government take many actions to improve working condition through regulation, enforcement, supporting academia, raising research fund, and establishing a research institute. Recently, classical occupational diseases have decreased and the interest from researchers has also reduced. Many claims for stress-related cardio-cerebro vascular diseases brought much concern and research on job stress. Work-related musculoskeletal disease became a major issue. Many workers are interested in quality of life, such as health promotion. Therefore, research on health promotion, job stress, and psychological problem from work organization would be the main research topics in the future, although research on occupational diseases, such as asthma, cancer and various diseases caused by chemicals are still attractive to researchers.

**Key words:** Research topics in Korea, Poisoning, Job stress, Musculoskeletal diseases, Health promotion

## Introduction

### *Geography and social characteristics*

The Republic of Korea occupies the southern half of the Korean peninsula in north-eastern Asia. The population is crowded into the few lowland areas. The geography of South Korea is characterized by rugged and often mountainous 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 brings 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. The annual precipitation in Seoul was 1,388 mm in 2002.

In 2002, about 47,639,000 inhabitants lived in an area of 99,000 square kilometers in South Korea. South Korea is very densely populated and highly urbanized. More than three quarters of the population live in urban areas, and 21% of the population live in Seoul.

The population growth rate has dropped rapidly since 1980s. In 2002, the growth rate was 0.63%, the crude birth rate was 10.3 per 1,000 persons, and the total fertility rate was 1.17 per woman. The life expectancy of South Koreans is estimated to be 76.5 yr; 72.8 yr for males and 80 yr for

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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 1,000 infants in 1999<sup>1)</sup>.

Until the separation into North and South in 1945, Korea had been a single nation since as early as the 7<sup>th</sup> century AD. Koreans form a single ethnic group, speaking a single language. For writing, Chinese characters have been used since the 5<sup>th</sup> century. The use of Chinese characters was limited to express the spoken Korean language, because the Korean had a different root of the language system. The Korean is an agglutative language while the Chinese is an isolated language. The Great King Sejong invented a new phonetic writing system, Hangul, in the 15<sup>th</sup> Century. This system consists of 14 consonants and 10 vowels. Thanks to Hangul, the literacy rate of South Korean is 99%. Children receive nine 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 colleges. South Koreans follow a number of different religious practices, and members of the same family may differ in their faiths. The major religions in 1995 included Buddhism (23.1%), Protestantism (19.7%) and Catholicism (6.6%). However, Confucianism basically dominates the Korean culture and customs<sup>1)</sup>.

#### *Labor characteristics*

Since the late 1960s, the Republic of Korea (South Korea) has undergone rapid industrialization. The Growth Domestic Product (GDP) increased from a meager 2 billion US dollars in 1960 to 476.6 billion US dollars in 2002. The economically active population expanded from 8.23 million in 1963 to 22.9 million in 2002. In 2002, the economically active population numbered 22,754,000, with an activity rate of 61.3%. The number of workers employed by industry was 22,052,000, and the number of unemployed persons was 702,000. The unemployment rate was 3.1%. On average, South Korean workers perform 24.0 d of work, 200.4 h of work per month. The average monthly wage was 1,532,750 Korean won. The Gross National Income (GNI) per capita was 10,013 US dollars.

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 Korean 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<sup>2)</sup>.

The history of occupational health in Korea is short because industrialization started since 1970s. The labor policy until the mid-1980s stressed economic development, minimized industrial disputes, and promoted the timely supply of skilled labor for the nation's industries. Improvement of the work environment did not receive attention from policy-makers and employers even after the Industrial Safety and Health Act was established in 1980. Consequently, the rapid industrialization of South Korea's 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, was responsible for more than 900 cases of carbon disulfide poisoning among employed workers. The number of diseases and impact on workers and industry had a huge social impact<sup>3)</sup>. In the wake of these incidents, South Korea's industrial safety and health was greatly enhanced.

#### *Occupational health issues in recent years*

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 problems in miners, the Pneumoconiosis Special Act was established in 1984 to protect miners' 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<sup>4)</sup>, asthma and neurological diseases as well as heavy metal and organic solvent poisoning<sup>5, 6)</sup> 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<sup>7)</sup>. Psychological stress caused by hierarchical work organization, long working hours, hard work and very competitive society is a newly appearing issue.

## General Status of Occupational Safety and Health

### *Statistics for occupational health*

Korea has two statistics for occupational diseases<sup>8)</sup>. The first is a measure of the number of suspected occupational diseases as identified by the Periodic Health Examination Program. The second is a measure of the number of compensated workers for occupational disease by Industrial Accidents Compensation Insurance.

The statistics from the Health Examination is very effective to find asymptomatic chronic diseases, such as pneumoconiosis, hearing loss and some poisonings. However, it can hardly detect symptomatic diseases without any signs like asthma, and easily curable diseases like dermatitis because of the characteristics of the periodic screening test. Employers are also very reluctant to reveal and report occupational diseases. Therefore, the statistics from the Health Examination includes mostly pneumoconiosis and noise-induced hearing loss.

The official statistics of occupational accidents and diseases uses the statistics from the Industrial Accidents Compensation Insurance. The statistics includes so-called work-related diseases such as cardio-cerebro vascular diseases, which are not compensable in most countries. Cerebral hemorrhage, infarction and myocardial infarction are believed to be aggravated by hard work or occupational stress, are by law compensable as work-related conditions. The concept of social security rather than scientific evidence made those be compensable. These policy decisions may inflate the statistics for occupational diseases and deaths in Korea, and thus limit comparisons with similar statistics of other countries. The statistics might also exclude unclaimed occupational injuries and diseases, and those of workers from the public sector and workers who are not covered by the compensation insurance.

### *Statistics from compensation*

The Industrial Accident Compensation Fund extended insurance coverage to 10,571,279 workers in 2002. This Fund does not include populations of workers in the public sector, teachers in private schools, and military officers. To receive compensation, occupational accidents and diseases require a minimum of four days medical treatment regardless of days away from work.

The occupational accident rate (expressed as the ratio of number of accepted claims for injury and disease, divided by the number of workers included in compensation insurance, and multiplied by 100) has decreased from 5.91 per 100 in

1965 to 0.77 per 100 in 2002. The total number of occupational injuries and diseases accepted by the compensation insurance were 81,911. The absolute number of compensated cases with work-related diseases has been rapidly increased recently from 1,120 in 1995 to 4,190 in 2002, including 944 classical occupational diseases, 1,296 work-related cardio-cerebro vascular diseases, and 1,927 work-related musculoskeletal diseases. The classical occupational diseases include pneumoconiosis (529 cases), noise induced hearing loss (219 cases), heavy metal poisoning (6 cases), organic solvent poisoning (45 cases), other chemical poisoning (26 cases), infection (86 cases), and others (156 cases)<sup>9)</sup>.

The occupational death rate (expressed as the number of accepted claims for occupational death, divided by the number of workers included in compensation insurance, and multiplied by 10,000) has decreased from 8.99 per 10,000 in 1965 to 2.46 per 10,000 in 2002. The number of occupational death accepted by compensation insurance was 2,605, including 1,378 injuries, 407 diseases, and 820 cardio-cerebro vascular diseases<sup>9)</sup>. The disease deaths included pneumoconiosis (386 cases), heavy metal poisoning (2 cases), organic solvents and chemicals poisoning (9 cases), infection (6 cases), and others (4 cases).

### *Statistics from health examination*

According to the Industrial Safety and Health Act, workers exposed to hazardous chemicals have a right to receive periodic health examination. In 2001, 2,326,324 workers received the General Health Examination, and 527,701 workers exposed to hazardous chemicals or physical agents received the Special Health Examination. From the annual health examination in 2001, 149,561 workers were identified from examination with suspected non-occupational diseases ( $D_2$ ), and 1,938 workers were identified from examination with suspected occupational diseases ( $D_1$ ). The cases of suspected occupational disease included noise-induced hearing loss (1,330 cases), pneumoconiosis (513 cases), organic solvent poisoning (9 cases), special chemical substances (5 cases), lead poisoning (22 cases), chromium poisoning (10 cases), and others (46 cases)<sup>10)</sup>.

## Laws and Regulations Relevant to Occupational Health

Workers' basic labor rights were initially guaranteed in 1948 under the First Constitution of the Republic of Korea. The Labor Standard Act was enacted in 1948. This Act contains basic concepts concerning workers' health. However, not much attention was paid to the occupational

safety and health at the time.

The industrial accident compensation insurance in South Korea is a social insurance system, under which the government, on behalf of employers, assumes responsibility for compensating workers for occupational injuries and diseases. With increased industrialization the Industrial Accident Compensation Insurance Act was passed in 1962, and enforced in 1964 to quickly compensate workers suffering from occupational injuries and diseases. The workers' compensation insurance began with workplaces in the mining and manufacturing industries, more than 500 employed workers in 1964. The scope of coverage of industrial sectors and workplaces has expanded. Since 2000, the Compensation Insurance covers all workplaces with one and more paid workers, whether they are regular, temporary or hourly workers, or even illegal foreign workers. The number of workers under insurance has increased from 161,150 workers in 289 workplaces in 1965, to 10,571,279 workers in 1,002,263 workplaces in 2002<sup>11)</sup>.

The Industrial Safety and Health Act (ISH Act) was enacted in 1981 to prevent injuries and diseases and to maintain workers' health. The ISH Act lays 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. The Act requires employers to measure work environment twice a year, and to provide medical examination to workers every year or two years, depending on the nature of exposure.

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 systematic 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.

## Research Activities

### *Societies of occupational health<sup>12)</sup>*

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 were mostly working for the Special Health Examination under the ISH Act.

In 1988, occupational physicians left the KSPM 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 the KSOEM consisted of professors of universities, company doctors, and physicians who were involved in periodic Special Health Examinations. The KSOEM registered about 650 members, 450 are qualified as specialists of occupational medicine. Only 300 are active at this time. The web page of the KSOEM is available at <http://www.ksoem.org>.

The Korean Society of Occupational and Environmental Hygienist (KSOEH) was established in 1990. The mission of the KSOEH is to improve the knowledge and experience of industrial hygienists and to protect workers' health. The members of the KSOEH consist of professors in universities, industrial hygienists working at companies as occupational health managers, and those working at occupational health service agencies. The KSOEH registered about 1,200 members. Only 250 are active at this time. The web page of the KSOEH is available at <http://www.ksoeh.org>.

The Korean Academic Society of Occupational Health Nursing (KASOHN) was established in 1990. The mission of the KASOHN is to improve knowledge and experience of nurses for occupational health. To achieve its goals, the KASOHN performs academic activities and educates its members. The KASOHN registered about 700 members, but only 200 are active.

### *Universities and public agencies*

The department of preventive medicine in many universities has traditionally taught students and conducted research on occupational health. 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 preventive medicine in many universities remains active in occupational health through research, training physicians and educating graduate students. Some of these departments also have an occupational health service agency, which is called the Institute of Occupational Health.

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-yr program, with 21 months clinical medicine and 27 months 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 hygienists hold master or doctoral degrees. There are several universities and graduate schools in Korea where a course of study in industrial hygiene is offered. These academic programs are active in research on occupational health.

Presently, more than 2,000 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 yr of training for licensed nurses.

In 1987, in accordance with the provisions of the Korea Industrial Safety and Health Agency Act, the government established the Korea Occupational Safety and Health Agency (KOSHA). The KOSHA established as a non-profit organization, has the mandate to provide technical support to factories as means to prevent industrial accidents and occupational diseases. The mission of this agency supports research and development, the dissemination industrial accident prevention technology, and service in the forms of guidance and training. About 50 professionals are conducting research and providing extramural funds on occupational health at the Occupational Safety and Health Research Institute under the KOSHA.

The Korean Association of Industrial Health (KIHA) was established in 1963. The KIHA was the first private organization of occupational health professionals in South Korea. The KIHA focuses on performing periodic health examination to workers. It also provided research activities and education to professions, until academic societies were

launched in the late 1980s. The KIHA still provides academic research projects and funds.

#### *Academic activities*

The KSOEM has convened annually two periodic academic conferences and one workshop since the first conference in 1988. The 31<sup>st</sup> conference was held in November 7–8, 2003 in Gyeongju. There were 250 participants and more than 70 papers were presented. A special lecture was given and a mini-symposium about work related musculoskeletal diseases was held during the conference. The KSOEM has issued a peer-review journal four times a year, named *The Korean Journal of Occupational and Environmental Medicine (KJOEM)* since its establishment. The latest issue was Vol. 15, No. 4 published in 2003<sup>13</sup>). The Korean Society for Preventive Medicine has published some research papers on occupational health in the *Korean Journal of Preventive Medicine (KJPM)*, which was issued the Vol. 36, No. 4 in December 2003.

The KSOEH has had periodic academic conferences twice a year since 1991. The last conference was held in May 2003. More than 300 participants attended the conference. The major topic of the conference was ergonomics, that is, how to measure the body burden work to prevent musculoskeletal diseases. The issues of occupational health management system and ventilation are also discussed. The KSOEH has issued a peer-review journal twice a year named *The Journal of Korean Society of Occupational and Environmental Hygiene (JKSOEH)*. The latest issue was Vol. 13, No. 2 published in 2003. The JKSOEH has published many original articles related to industrial hygiene since 1991.

The Institute of Industrial Medicine, Catholic Industrial Medicine Center at the Catholic University, which is the oldest institute of occupational health in South Korea, has published the *Korean Journal of Occupational Health (KJOH)*. The KJOH issued Vol. 42, No. 4 in December 2003.

The KOSHA is going to host the 9<sup>th</sup> International Symposium on Neurobehavioral Methods and Effects with the KSOEM in Gyeongju in September 26–29, 2005 (<http://home.kosha.net/~neurotox>). The KIHA hosted the 9<sup>th</sup> Asian Conference on Occupational Health (ACOH) in Seoul in 1979 and the 4<sup>th</sup> International Symposium on Biological Monitoring in Seoul in 1998.

## **Research Topics**

### *Before 1990s*

Papers related to occupational health were published in the following scholarly periodicals: Korean Journal of

**Table 1. Number of papers in occupational health journals by subject in Korea**

	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

\*: Modified table from 30 yr history of Korea Industrial Health Association (1993).

Preventive Medicine, Korean Journal of Occupational and Environmental Medicine, The Journal of Korean Society of Occupational and Environmental Hygiene, Korean Journal of Occupational Health. These journals publish original articles and review papers in the Korean language, accompanied by an abstract written in English. Over the years, the articles published in these journals rapidly increased in number and improved in quality. A total of 520 papers were published in those journals from 1950 to 1992<sup>14</sup>. In contrast, only eight papers were published in 1950s; 83 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-induced hearing loss and pneumoconiosis were major health issues prior to the 1970s, because there 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. Toxicological research involving lead and mercury poisoning was driven by many cases of lead poisoning and mercury poisoning prevalent in the 1980s. From 1961 to 1992, 64 papers related to lead toxicity were published. The outbreak of carbon disulfide poisoning in the late 1980s and early 1990s brought many research related to organic solvents and heavy metals (Table 1).

#### *From 1990s to the present*

The KJOEM, which is the official journal of the KSOEM, has published 592 articles: 536 original articles, 13 reviews and 43 case reports 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)<sup>15</sup>. 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 accounted for 34, 18 and 15, respectively. Papers on manganese were not published until the late 1990s, a time period when Parkinson syndrome in welders was an important issue in occupational health. Research on organic solvents was the 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 musculoskeletal diseases have increased dramatically, from 8 papers in 1989–1993 time period to 33 papers in 1999–2003. Ten articles on job stress were published in 1989–1993, 25 from 1999–2003, and no article during the period 1989–1993 (Table 2).

The proportion of research papers involving musculoskeletal diseases, job stress, health promotion and physical agents has increased, and decreases noted for publications on pneumoconiosis, chemical and occupational health management. This shift in publications fairly represents the situation of occupational health in Korea. Chemical poisonings by carbon disulfide, lead, cadmium and organic solvents were the main issues in South Korea's occupational health community in the early 1990s. Rapid increases in compensation cases for the cardio-cerebrovascular diseases in the mid 1990s brought many research papers related to job stress, which was believed to be one of aggravating factors of cardio-cerebrovascular diseases. Many cases of musculoskeletal diseases have filed for compensation in the late 1990s, which consequently triggered research on musculoskeletal disease and ergonomic.

**Table 2. Changes of research topics published in the KJOEM in 1989–2003**

Area	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	100.0

### *The future*

The South Korean occupational health community has witnessed improvements in most workplaces. Traditional bad working conditions 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 allergens are still widely used. Work-related health problems like stress, musculoskeletal disease, psychological and psychiatric problems still attract the interest of researchers. Research on work organization and employment are important areas for future research. KOSHA is preparing the national research agenda on occupational safety and health in the 21<sup>st</sup> century and will be available in 2004.

### *The problem of research papers in Korea*

A major problem confronting South Korea's researchers in occupational health is the language used to publish in our journals. These scholarly periodicals are all peer-reviewed, and contain many valuable case reports and original articles. However, all journals are published using the Korean language, though an abstract written in English is accompanied. Few papers were published in international English journals. The articles written using the Korean language are even not available from abstract searching programs. Thus, many excellent original articles and case reports have not been read and cited by international scientists. This is a missed opportunity, which becomes compounded when one realizes that unique experiences and lessons from rapid industrialization in Korea is not shared with international scientists. Moreover, the opportunity is

being lost to transfer knowledge and experiences to prevent the same problems from occurring in many developing countries in the future. Korean scientists should write manuscripts in English and simultaneously international abstract searching program providers should add abstracts published in the journals of occupational health in Korea.

### **Conclusion**

Research on occupational health in South Korea has drastically developed both quantity and quality, paralleling the growth of the South Korean economy. With industrialization in the 1970s, many workers were exposed to hazardous working environment and suffered from occupational accidents and diseases. The main research topics in the 1970s were pneumoconiosis, noise-induced hearing loss and some chemical poisoning. Improving working condition was not a high priority until the late 1980s, when the economy was more developed and the policies supported workers' health protection. The carbon disulfide poisoning in a viscose rayon factory, which has happened in most developed countries since the late 19<sup>th</sup> century, had a significant impact to our society. Government took many actions to improve working condition through regulation, enforcement, support to academia, raising research fund, and establishing a research institute. Many research projects have been performed at universities and institutes. As a consequence, the working conditions in South Korea have improved remarkably during last 10 yr. Recently, we have noted the decline of classical occupational diseases such as poisoning and pneumoconiosis, accompanied with decreased interest in these research topics from researchers. Many cases of claims for stress-related cardio-cerebrovascular diseases were accepted in the mid-1990s, which prompted much concern and stimulated research on job stress. Work-

related musculoskeletal disease (WRMSD) became a major issue in the early 21<sup>st</sup> century, as many cases of WRMSD were claimed in the late 1990s, especially the increasing workload after the economic crisis in 1998. At the same time, many workers are interested in quality of life, such as health promotion. Keeping a healthy body beyond managing hypertension, diabetes and hypercholesterolemia is the main concern on occupational health. Therefore, research on health promotion, job stress, and psychologic problem from work organization merit attention on our national research agenda, and research on other occupational diseases, such as asthma, cancer and various diseases caused by chemicals, should remain priority areas and thus attractive to researchers.

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