

Regulation and Response: Industrial Safety and Health Law in Japan(II)

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NOTES

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Douglas J. Drennan*

(Part I-V: see volume 64(4))

- I. Introduction
- II. Historical Development of Safety and Health Laws
- III. Modern Legal and Regulatory Framework Governing Safety and Health Issues
- IV. The Industrial Safety and Health Act of 1972
- V. Modern Regulatory Organization and Function: The Labor Standards Bureau
- VI. Safety and Health Records in Japan
- VII. Case Study: Safety and Health at Denki K.K.
- VIII. Conclusions

VI. SAFETY AND HEALTH RECORDS IN JAPAN

Examining a country's safety and health record allows one both to contextualize the issue of safety and health in that country, and to assess, albeit roughly, the efficacy of its regulatory structure. It is with this purpose that I now turn to Japan's injury and illness experiences. The total number of work-related fatalities, injuries and illnesses for the years 1959 to 1994 are presented in Table 7 on the following page. Roughly speaking, and not accounting for years of exceptions, from the Meiji Restoration to the early 1960s, the number of occupational injuries in Japan steadily increased, commensurate with industrial change. 1961 was a peak year for both deaths (6,712) and injuries (481,686). Since that time, however, Japan's death and injury statistics have steadily decreased. There was a particularly steep decline in fatalities from the

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Table 7: Occupational Fatalities, Injuries, and Illnesses in Japan, 1959–1994

Year	Number of Fatalities	Percent Change from Previous Year	Number of Injuries and Illnesses ^a	Percent Change from Previous Year
1959	5,895	-	435,017	-
1960	6,095	0.3	468,139	7.6
1961	6,712	10.1	481,686	2.9
1962	6,093	-10.2	466,126	-3.3
1963	6,506	6.8	440,547	-5.8
1964	6,126	-6.2	428,558	-2.8
1965	6,046	-1.3	408,331	-4.9
1966	6,303	4.3	405,361	-0.7
1967	5,990	-5.2	394,627	-2.7
1968	6,088	1.6	386,443	-2.1
1969	6,208	2.0	382,642	-1.0
1970	6,048	-2.6	364,444	-5.0
1971	5,552	-8.9	337,421	-8.0
1972	5,631	1.4	324,435	-4.0
1973	5,269	-6.9	387,342	19.4
1974	4,330	-21.7	347,407	-11.5
1975	3,725	-16.2	322,322	-7.8
1976	3,345	-11.4	333,311	3.4
1977	3,302	-1.3	345,293	3.6
1978	3,326	0.7	348,826	1.0
1979	3,077	-8.1	340,731	-2.4
1980	3,009	-2.3	335,706	-1.5
1981	2,912	-3.3	312,844	-7.3
1982	2,674	-8.9	294,319	-6.3
1983	2,588	-3.3	278,623	-5.6
1984	2,635	1.8	271,884	-2.5
1985	2,572	-2.4	257,240	-5.7
1986	2,318	-11.0	246,891	-4.2
1987	2,342	1.0	232,953	-6.0
1988	2,549	8.8	226,318	-2.9
1989	2,419	-5.4	217,964	-3.8
1990	2,550	5.4	210,108	-3.7
1991	2,489	-2.4	200,633	-4.7
1992	2,354	-5.7	189,589	-5.8
1993	2,245	-4.8	181,900	-4.2
1994	2,301	2.5	175,700 ^b	-3.5
Average	4,156.0	-3.0	336,619.5	-2.7

Source: Denki K.K. unpublished data, from Ministry of Labor.

^a Compensated injuries and illnesses (through 1972, deaths, injuries and illnesses resulting in the inability to work eight or more days; from 1973 onward, four or more days.)

^b Estimate, Ministry of Labor.

years 1972 to 1976, where occupational deaths decreased by over 59 percent (from 5,631 to 3,345). Injury and illness only decreased 0.5 percent during the same period but the reason for this is that 1973 marked a change in the threshold reporting requirements. Prior to 1973, only injuries and illnesses that resulted in the inability to work for eight or more days were counted; from 1973 onwards, injuries and illnesses resulting in four or more days absence from work were included. The 19.4 percent increase in 1973 can thus be properly understood.

Figure 8: Longitudinal Fatality Trends in Japan, 1959-1994

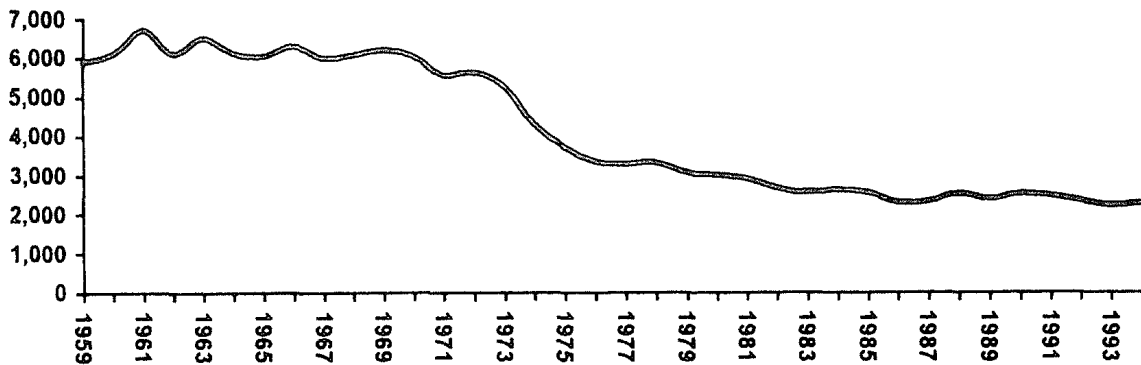
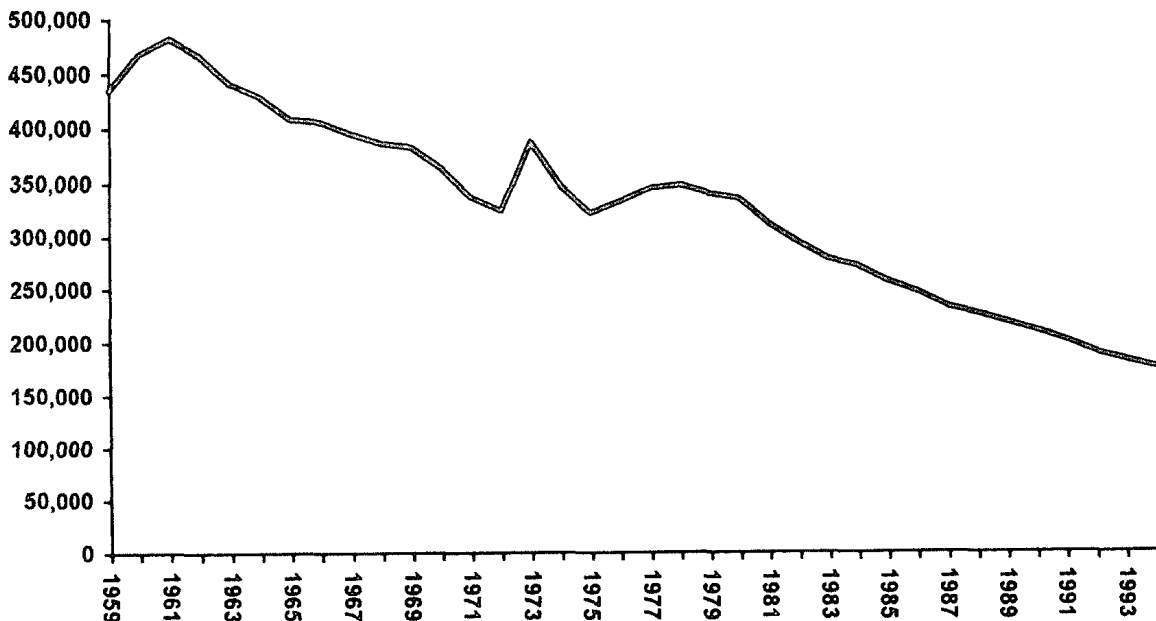


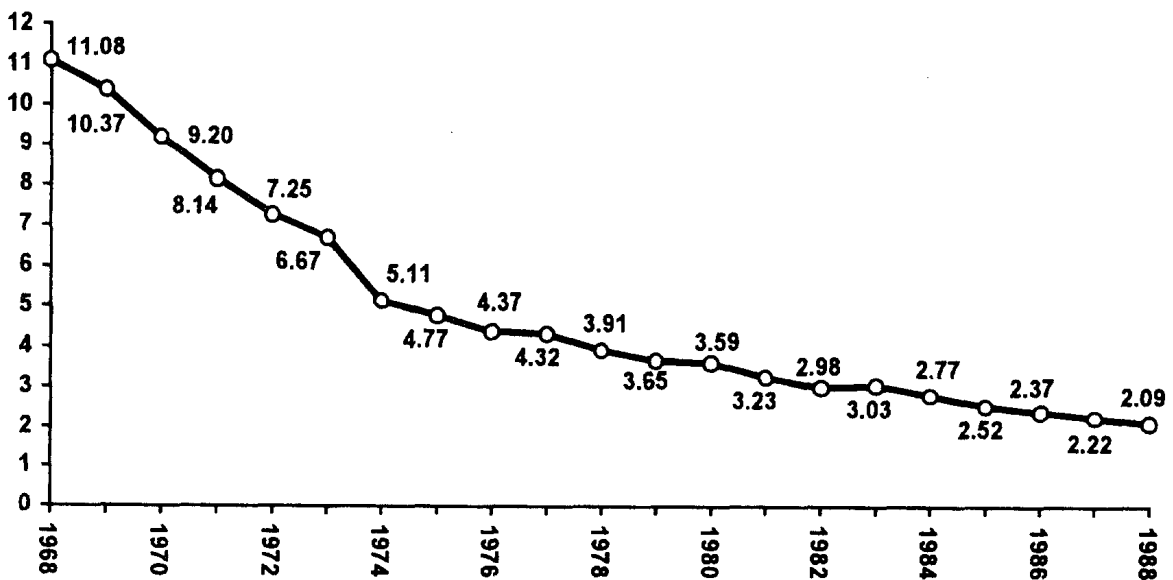
Figure 9: Longitudinal Injury and Illness Trends in Japan, 1959-1994



The decline in both fatalities and injuries and illnesses in Japan has been

impressive. Figure 8 and Figure 9 on the previous page chart these longitudinal changes. One inescapable observation is how drastically the numbers of fatalities in Japan decreased in the period just following the passage of ISHA in 1972. Opinions vary as to whether or not the new legal mandates were the reason for the decline, or if the law itself was a byproduct of other trends which exerted their influence on workplace safety. These opinions will be discussed again later. What is not open to doubt is that the number of reported occupational fatalities in Japan has decreased dramatically in the past thirty years.

Figure 10: Injury and Illness Incidence Rates in Japan, 1968-1988



Source: JAPAN INSTITUTE OF LABOUR, INDUSTRIAL SAFETY AND HEALTH 8 (Japanese Industrial Relations Series No. 9. 1988); RICHARD E. WOKUTCH, WORKER PROTECTION, JAPANESE STYLE 206 (1992).

^aReported injuries and illnesses resulting in an incapacity to work for one or more days per million hours worked.

Controlling for change in the workforce population, analysis of Japan's injury and illness incidence rates (injuries and illnesses per million hours worked) is also very instructive. As shown in Figure 10, in 1968, the first year for which such data is available, there were 11.08 injuries and illnesses per million hours worked. In 1972, the year ISHA was passed, a downward trend was already exerting itself and the rate had decreased to 7.25, a drop of 34.6 percent in just 4 years. By 1988, the rate had fallen to merely 2.09 injuries and

illnesses per million hours worked. Thus, in the twenty-year period for which this data is available, injury and illness incidence rates in Japan decreased by 81.2 percent.

Further analysis can be made of Japan's occupational safety and health records by international comparison, in particular, with the United States. Effective comparisons serve to contextualize and thus understand a foreign regulatory structure. It also is a way to assess the efficacy of a regulatory structure and its environment. Unfortunately, cross-national comparisons, especially in occupational safety and health areas, are complicated by a host of variables that are difficult (if not impossible) to control for. Scholars in the field have thoughtfully articulated nine main sources of bias in making international comparisons of workplace injury and illness data: (1) different definitions of work injuries and illnesses; (2) different incentives and disincentives for having an incident officially recorded as a work injury or illness; (3) different methods by which statistics are collected that rely on "reported" or "compensated" injuries and illnesses and that thus exclude certain employers on the basis of size or industrial sector; (4) different bases on which rates are calculated; (5) different national and international political influences regarding the compiling and reporting of statistics; (6) different national traditions regarding reporting; (7) different industrial relations; (8) different distributions by industry of the national work forces; and (9) different degrees of ethnic homogeneity.¹

Wokutch attempted to overcome these biases and adjust injury and illness data for each country for the entire private sector, for the manufacturing sectors, and for the automotive industries, the object of his study.² His adjusted figures, presented in Table 8 on the following page allow for a more discriminating and penetrating comparison.

This adjusted data shows that average incidence, severity, and fatality rates all are higher in the United States than in Japan. The smallest disparity is found in fatality rates, where the average rate in the United States was 4.06 fatalities per 200 million hours worked, compared to Japan's 3.60, a difference of

1 Richard E. Wokutch and Josetta Mclaughlin, *The Sociopolitical Context of Occupational Injuries*, in RESEARCH IN CORPORATE SOCIAL PERFORMANCE AND POLICY 113-37 (Lee E. Preston, ed., 1988). For an examination of these nine sources of bias in the U.S.-Japanese context, see WOKUTCH, *infra* note 2, at 196-204.

2 RICHARD E. WOKUTCH, WORKER PROTECTION, JAPANESE STYLE: OCCUPATIONAL SAFETY AND HEALTH IN THE AUTO INDUSTRY 209-215 (1992).

only 12.8 percent. There is a greater difference in severity rates. While Japan's adjusted severity rate was 54 for the years studied, the United States' severity rate was 76.8 percent higher at 95.46. But even this large disparity is overshadowed by the disparity in incidence rates. The average injury and illness incidence rate in the Japanese private sector was 0.51 injuries and illnesses per hundred full-time workers. The corresponding statistic in the United States was 3.76, 637.3 percent higher than in Japan! See Figure 11 on the following page.

Table 8: Adjusted Work Injury and Illness Experience in the United States and Japan, 1983-1987

Year	United States ^a			Japan ^e		
	Injury and Illness Incidence Rate ^b	Severity Rate ^c	Fatality Rate ^d	Injury and Illness Incidence Rate ^f	Severity Rate ^g	Fatality Rate ^h
1983	3.6	90.18	4.1	0.61	60	4.0
1984	3.8	96.15	4.3	0.55	68	6.0
1985	3.7	97.90	4.4	0.50	58	4.0
1986	3.8	96.15	3.7	0.47	44	2.0
1987	3.9	90.18	3.8	0.44	40	2.0
Average	3.76	95.46	4.06	0.51	54	3.6

Source: RICHARD E. WOKUTCH, WORKER PROTECTION, JAPANESE STYLE 210 (1992).

^aReported injuries—lost-workday cases; cases involving only restricted work activity are excluded. Coverage—private sector establishments with one hundred or more employees.

^bNumber of lost-time injuries and illnesses per hundred full-time workers.

^cDays away from work due to injuries and illnesses per hundred full-time employees. Charges of 7,500 lost workdays due to each fatality are added to U.S. data to enhance comparability with Japanese data.

^dFatalities per 200 million hours worked, which is equivalent to the working time of 100,000 full-time workers.

^eReported injuries—lost-workday cases. Coverage—private sector establishments (excluding construction) with one hundred or more employees.

^fNumber of lost-time injuries and illnesses per 200,000 hours worked, which is equivalent to the working time of one hundred full-time workers.

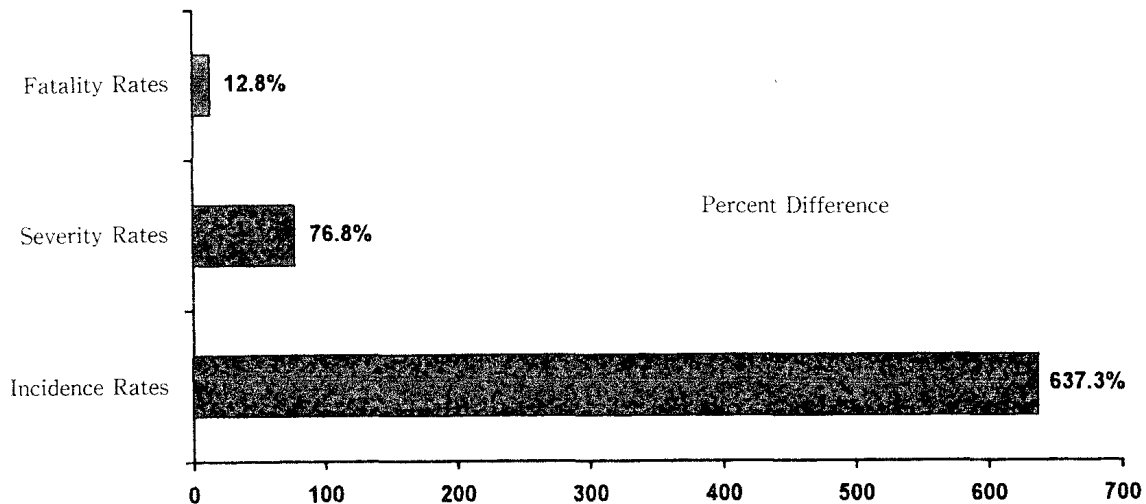
^gDays away from work per 200,000 hours worked, which is equivalent to the working time of one hundred full-time workers.

^hFatalities per 200 million hours worked, which is equivalent to the working time of 100,000 full-time workers.

What is troubling in these statistics, from a comparative perspective, is not that the United States apparently experiences many more workplace accidents

and illnesses, but that the differential between comparative severity rates and incidence rates is of such a large magnitude. But even more troubling is the magnitude of the difference between incident rates and fatality rates.

Figure 11: Safety and Health Disparities between the United States and Japan



The average work injury and illness incidence rate for the U.S. private sector for the period reported was 3.76 per one hundred full-time workers, or 3,760 per 200 million hours worked. During this same period, the average fatality rate was 4.06 per 200 million hours worked. Thus, the ratio of lost-work injuries and illnesses to fatalities (“injury-fatality ratio”) was 3,760: 4.06 (or 926:1), meaning that 1 death occurs every 926 times a lost-time injury or illness occurs in the United States. During the same period, the reported injury and illness incidence rate in Japan was 0.51 per 200,000 hours worked, or 510 per 200 million hours worked, and its fatality rate was 3.6 per 200 million hours worked. Thus, Japan’s injury-fatality ratio was 510:3.6 (or 142:1), meaning that in Japan, 1 death occurs every 142 times a lost-work injury or illness occurs. According to these figures, a worker is 6.52 times more likely to die from an occupational accident or disease in Japan than in the United States. There is something extremely dubious concerning the validity of these numbers.³ As Wokutch put

³ Data for the automobile industry in both countries reveal an even more stark disparity. Statistics reveal that in Japan, a death occurs every 220 times a lost-time injury and illness occurs whereas in the United States, a death only occurs every 2,480 times a lost-time accident or illness occurs. Thus, in Japan, 0.45 percent of the industrial accidents result in death and in the United States, only 0.04 percent do. The differential between these fatality-incident ratios is an incredible (and incredulous) 1125 percent!

it, this situation “does not have a logical explanation if the data are accurate.”⁴ I agree with Wokutch that it is illogical to accept this data as accurate. But where lies the explanation?

Since work fatalities are usually investigated more closely than work injuries and illnesses, they are more likely to be accurately reported. They are, simply put, harder to hide, by worker or management. Thus, the difference in the injury-fatality ratios is due either to underreporting of nonfatal injuries in Japan or overreporting of them in the United States. Given that underreporting of injuries has been a recognized problem in the United States, this latter option is unlikely.⁵ Therefore, the logical culprit is the underreporting of injuries and illnesses in Japan.

Not only does there appear to be a pattern of widespread underreporting of injuries and illnesses in Japan, but that pattern appears to have increased over time. As early as 1967, it was observed that the rate of fatalities to the rate of lost-work injuries had increased substantially over time.⁶ Wokutch compared the number of fatalities to the number of injuries and illnesses (resulting in four or more days of lost work) in 1979 and 1990. He found that in 1979 there was 1 death for every 111 injuries, whereas in 1989, there was 1 death for every 90 injuries.⁷ What is important here is not the actual ratio but its change over time. Injury-fatality ratios are normally constant, but in Japan they are subject to a downward pressure. Wokutch, in his study of an automobile plant in Japan, found that workers conceal injuries and illnesses for a number of reasons, including concern that reporting the injury or illness will hurt production, fear of being reprimanded by superiors, fear of being ridiculed by coworkers, and a desire not to let down fellow workers and superiors in the pursuit of good safety and health records.⁸ Such factors could contribute to an environment unfriendly to reporting minor injuries or illnesses and thus to a lower incidence rate.

4 *Id.*, at 213.

5 *See, e.g., id.* (noting OSHA's discovery and penalty of underreporting in the automotive industry in the mid 1980s).

6 Takeshi Fujimoto, *A Short History of Occupational Accidents in Japanese Industries*, in 67 REPORT OF THE INSTITUTE FOR THE SCIENCE OF LABOUR (1967).

7 WOKUTCH, *supra* note 2, at 213-214. Note that these calculations are based on four or more lost-work days and thus not directly comparable to the above statistics.

8 *Id.*, at 104.

VII. CASE STUDY: SAFETY AND HEALTH AT DENKI K.K.

In this section, I will examine the safety and health experience of a major Japanese electronics firm, identified here as Denki K.K.⁹ I will describe the firm itself, its organization of safety and health management, its safety- and health-related activities, and its injury and illness experiences. This examination will provide two things. First, it will allow us to see how ISHA's provisions are actually implemented, giving life to the letter of the law. Second, it will provide the groundwork for further study into the relationship between regulation and response. This aspect will not be complete until a cross-national comparison is conducted with a similar undertaking in the United States, thus isolating cultural factors and fleshing out the impact that different legal systems and their styles can have on businesses.

Caution must be given regarding the research subject. Denki K.K. is a large Japanese corporation, whose real name is a household word around the globe. It possesses many of the characteristics so closely associated with Japanese businesses. It is this fact that warrants concern. Most of the literature on the Japanese economy and industrial relations has focused on the well-known and highly successful large companies. According to the dominant paradigm, Japanese labor practices are fundamentally different from American labor practices in a number of ways, including "lifetime employment" and "seniority-based advancement." Soon after James Abegglen first articulated these practices, they became hallmarks of a widely accepted stereotype.¹⁰

However, recent scholarship has been more critical of the traditional descriptions of the Japanese firm, pointing out that only a small number of employees work in these model corporations and that such stereotypical working conditions do not prevail in other sectors.¹¹ It is estimated that over 80 percent of all Japanese employees work in small- and medium sized enterprises

9 "Denki" is the Japanese word for electronics. "K.K." is an abbreviation for *kabushiki kaisha* (joint-stock company), the equivalent of a corporation in the United States.

10 JAMES C. ABEGGLEN, *THE JAPANESE FACTORY: ASPECTS OF ITS SOCIAL ORGANIZATION* (1958). Other descriptions of the Japanese company can be found in RONALD E. COLE, *WORK, MOBILITY AND PARTICIPATION* (1979); TAISHIRO SHIRAI, ed., *CONTEMPORARY INDUSTRIAL RELATIONS IN JAPAN* (1983); JAMES C. ABEGGLEN AND GEORGE STALK, JR., *KAISHA: THE JAPANESE CORPORATION* (1985); and JAMES C. ABEGGLEN, *MANAGEMENT AND WORKER: THE JAPANESE SOLUTION* (1973).

11 See, e.g., NORMA J. CHALMERS, *INDUSTRIAL RELATIONS IN JAPAN: THE PERIPHERAL WORK-FORCE* (1989).

(“SMEs”). When you exclude the agricultural sector, that number rises to 88 percent. It is also estimated that over half of all workers work in businesses with less than 30 regular employees. As for the manufacturing sector, which includes Denki K.K., only 26 percent of all employees work for large companies.¹² It is also noted that working conditions at SMEs vary significantly from those of a large Japanese company.¹³ Thus, caution. The dual (or “core-peripheral”) structure of the Japanese economy prevents generalizing my research findings to other sectors of the economy, or to the Japanese economy as a whole.

A. Denki K.K.

Denki K.K. is a major producer of electronics in Japan and around the world. It has both production and sales offices throughout Japan and the world.¹⁴ It employs over 73,000 employees in Japan, and over 190,000 worldwide,¹⁵ 97 percent of which are considered to be regular employees.¹⁶ It annually recruits anywhere from 1,400 to 3,100 regular employees.

Like other Japanese companies, regardless of sector, Denki K.K. is experiencing a graying of its workforce. In 1960, the average age of its employees was 28.7. That number decreased to 28.6 in 1970 and has since steadily increased, reaching 35.6 in 1980 and 37.7 in 1990. The average age remains at 37.7 in 1996.

Wages at Denki K.K. consist of two types: core wages (*hon-kyū*) and job-related wages (*shigoto-kyū*). Core wages equal the sum of yearly increases based on job performance. In other words, the annual increase in core wages is determined by the worker’s performance, but the actual amount paid is the sum of the increase and the amount of the previous year’s core wages. Job-related

¹² *Id.*, at 47-48, (citing Japanese government statistics).

¹³ *Id.*, at 47-74 (giving detailed data on differentials in wages, benefits, and working hours).

¹⁴ As of March 1995, Denki K.K. had established branch offices in 22 countries and subsidiaries in another 86. In the United States alone, Denki K.K. has 14 direct subsidiaries. DENKI K.K., ANNUAL REPORT 1995.

¹⁵ *Id.*

¹⁶ Much of the information in this section was provided by the Deputy Manager, Planning Staff, Employee Relations Division, Denki K.K. by letter dated July 12, 1996. Unless otherwise cited, information can be attributed to this source. Also, a note about regular employees; the number of nonregular employees in Japan has been increasing and their labor experiences are often very different from those of regular employees. See e.g., Vai Io Lo, *Atypical Employment: A Comparison of Japan and the United States*, 17 COMP. LAB. L.J. 492 (1996). This must also be kept in mind in qualifying my research findings.

wages, on the other hand, are determined by the difficulty of a particular assignment and the worker's performance at that assignment. In this way, Denki K.K. officials feel that they have achieved an optimal mixture of seniority- and performance-driven wages. Generally, as an employee advances within the company, the ratio of job-related wages to core wages increases, allowing for an even higher insertion of personal ability and performance into the remuneration calculation.

Employees at Denki K.K. enjoy a better-than-average work schedule. Denki K.K. is committed to the five-day workweek and for the most part stick to it. If weekend work is required, 145 percent of normal wages are paid. Like other companies, it sometimes exchanges Saturday for weekdays. In that case, a weekday will be designated as a no-work day and Saturday will be considered a regular workday, with no overtime pay. This is done most often to accommodate for additional time off around the time of holidays. These exchanges are Denki K.K.-wide, meaning that they are not determined on an individual plant basis but on a national basis. Employees are also afforded a total of 45 days time off during the year (15 national holidays, 6 company holidays, and 24 days of annual (personal) leave).

Whether Denki K.K. employees take all of their days of annual leave is another question. They do not.¹⁷ Plausible explanations for the fact that workers choose to work despite having no direct financial incentive to do so include the practice of assigning work tasks to teams with few redundant workers, not to individuals. Thus, to take personal leave time directly affects your closest coworkers, increasing their workload. The influence this has on personal decisions regarding taking time off will be familiar to many professionals in the United States who work in a team, but the situation is probably experienced by a broader spectrum of workers and more culturally reinforced in group-minded Japan. Another explanation relates to annual bonuses. Japanese employers will reduce the amount of a worker's annual bonus¹⁸ if the worker has excessive unexcused absences. Any absence from work besides those provided for (annual leave, bereavement leave, marriage leave, maternity

17 Wokutch found that employees at a large automobile factory on average only took 40 percent of their personal vacation days in the 1984-1985 fiscal year. WOKUTCH, *supra* note 2, at 98.

18 Bonuses in Japan are very substantial, equivalent to as much as six-months pay in some firms, and are an integral part of the remuneration policies in Japanese firms.

leave, leave in preparation for a transfer, menstrual leave, “step-up” leave,¹⁹ “long service anniversary leave,”²⁰ and retirement leave), is subject to discipline. Company officials were clear, however, that excused absences (including annual leave time) would in no way affect the employee’s annual bonus. Controllable absenteeism at Denki K.K. is low, only 0.4 percent for fiscal year 1995.

B. Management of Safety and Health

According to ISHA’s sections on employer liability, the president (*sha-chō*) of Denki K.K. has ultimate responsibility for safety and health. In practice, however, the Senior Vice President (and Director) (*jōmu torishimariyaku*) assigned as the Safety and Health Management Group Officer (*anzen eisei kanri buntan yakuin*) and the General Manager of the Employee Relations Division (*kinrō-bu-chō*) are held responsible internally for safety and health matters.²¹ But it is the plant’s General Manager (*kōjō-chō*) who is responsible for the day-to-day implementation of safety and health standards. Although outside of the direct line of command, technical support is provided by Denki K.K.’s Safety and Health Center (*anzen hoken sentā*).²²

The overall structure of Denki K.K.’s safety and health function is illustrated in Figure 12 on the following page. The structure illustrated is, in principle, the structure implemented in all of Denki K.K.’s domestic facilities. However, Denki K.K. officials were very candid in admitting that the structure is actually only “fully” implemented in Denki K.K.’s domestic factories. Other Denki K.K. facilities, such as its multifarious research facilities²³ and its ubiquitous sales and branch offices,²⁴ only implement the system to the extent necessary. Interestingly, this system is not implemented in any of Denki K.K.’s

19 Given to employees with 10, 20, and 30 years of service.

20 Given to employees with 15, 25, and 35 years of service.

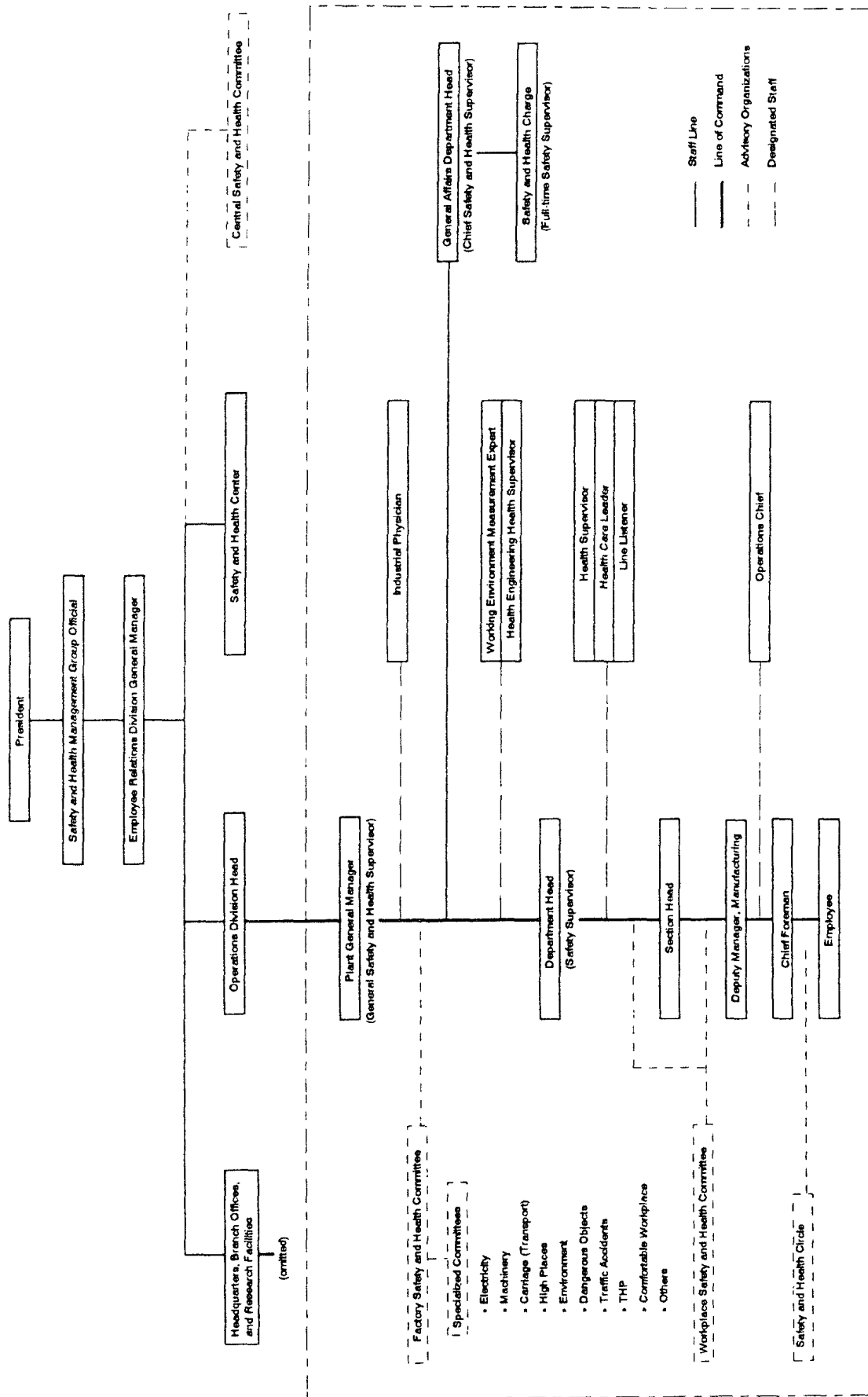
21 Interview with the Manager of the Safety and Health Center (May 22, 1996) [name of person and place of interview omitted] (two others were also present and participated in the interview: a Chief Specialist (*san-yō*) who holds a doctor’s degree in medicine (*igaku hakushi*) and a Senior Specialist (*fuku-sanji*) [hereinafter Safety and Health Center interview]).

22 Denki K.K. uses the term *hoken* for health rather than *eisei* or *kenkō* as used in ISHA. *Hoken* literally means “preserving health” and thus has an important nuance absent from both *eisei* and *kenkō*.

23 Denki K.K. has 1 research development center (*kenkyū kaihatsu sentā*), 1 production techniques research facility (*seisan gijutsu kenkyū-jō*), 8 engineering research facilities (*gijutsu kenkyū-jō*), 1 system engineering center (*shisutemu gijutsu sentā*), and 5 system centers (*shisutemu sentā*) in Japan.

24 Denki K.K. has 65 different branch offices (*shisha and shiten* combined) and business offices (*eigyō-jō*) in Japan.

Figure 12: Structure of Safety and Health Management at Denki K.K.



Source: Denki K.K., unpublished documents.

foreign manufacturing operations. The safety and health function in each facility varies with the legal system it finds itself in and the officials I spoke with opined that if there were no legal requirements in the country in question, then Denki K.K. would probably not have any safety and health personnel or structure at all. What is interesting about this comment is that it is contrary to the assertion often made by Japanese companies that safety and health welfare is in the economic interest of the company itself.

Within each manufacturing facility, Denki K.K. maintains a Safety and Health Charge (*anzen hoken tantō*), which is the center of safety and health activities on a daily basis and has responsibilities similar to those of the Safety and Health Center. It has safety and health personnel divided into safety, environmental control, task control, and health administration functions, as well as one or two doctors and anywhere from five to ten nurses. The Safety and Health Charge is operated during the day but not during the night shift. Contrary to other findings,²⁵ when the department and section heads are gone during the night shift, the foreperson (*sagyō-chō*) becomes principally responsible for safety and health and the factory, not any of these safety and health experts.

Denki K.K. also maintains and operates four hospitals, independent of internal health centers. These hospitals are operated with the idea of providing benefits to the workers but all of them are open to the public. At the hospital next to the Safety and Health Center, where I conducted some of my research, only about 40 percent of the patients were Denki K.K.-related; the other 60 percent come from the community at large. Occasionally, injured or ill workers from other places will come to a Denki K.K. hospital to receive long-term care. All four of these hospitals are reported to be operating at a loss.²⁶ Asked why, Denki K.K. officials first responded that doctors get paid more at their hospitals than at other hospitals but it sounded flat the moment they said it. After expressing doubts, they admitted that the hospitals are simply not very busy.

25 WOKUTCH, *supra* note 2, at 106.

26 I suspected as much but enjoyed asking the question anyway. The respondents seemed to enjoy it also for they howled with laughter at the mere thought of the hospitals making a profit.

C. Safety and Health Goals

One method that Denki K.K. uses to promote safety and health within its ranks is to establish safety and health slogans, goals, and practical principles. Denki K.K. has both a safety slogan (“The eyes of two are better than the eyes of one. Everyone check and work safely”),²⁷ and a health slogan (“Your sparkling self is splendid. I too will become healthy”),²⁸ which are noticeable in various internal publications, as well as in the workplace.

Denki K.K. also has established goals. The safety goal is phrased as follows: “achieving zero labor accidents - zero commuting accidents.”²⁹ The Manager of the Safety and Health Center and others on his staff have steadfastly refused the idea of setting any other goal besides zero on ideological grounds (How can you set a goal that accepts even a single injury?). The Chief Specialist, who is a retired university professor of industrial medicine and not a life-long Denki K.K. employee, is not so religious; he thinks that such a stance is too abstract and thus not very helpful. He thinks that a good goal would be half of the previous year’s level. Denki K.K.’s health goal is as follows: “promote the formation of a comfortable workplace and plan to advance the maintenance of the health of your mind and body.”³⁰ More will be said of Denki K.K.’s health-promotion activities below.

In addition to slogans and goals, Denki K.K. also has established six practical principles known as the “Articles of Practical Emphasis.”³¹ They are as follows:

- 1) Establish a safety and health management system.
- 2) Execute the responsibilities of the manager-supervisor.
- 3) Enhance the consciousness and promotion of safety and health education.
- 4) Promote zero accidents.
- 5) Promote the establishment of a comfortable workplace

27 *“Hitori no me yori futari no me. Minna de kakunin anzen sagyō”*

28 *“Kagayaku anata ga suteki desu. Watakushi mo yarimasu, kenkō-zukuri”*

29 *“rōdō-sha saigai zero, kōtsū saigai zero no tassei”*

30 *“narabi ni kaiteki shokuba no keisei o seishin shi shinshin no kenkō hoji zōshin o hakaru”*

31 *“Jūten Jitchi Jikō”*

(1) *anzen eisei kanri taisei no kakuritsu*

(2) *kanri-kantoku-sha no shokuseki no suikoku*

(3) *anzen eisei kyōiku no suishin to ishiki no kōyō*

(4) *zero saigai no suishin*

(5) *kaiteki shokuba-zukuri no suishin*

(6) *kenkō no hoji zōshin*

- 6) Advance the maintenance of health.

D. Safety and Health Activities

One of the more unique activities undertaken by officials at Denki K.K., as well as at other Japanese companies, is to go to a Shinto shrine and pray for the health and safety of its employees. Usually, they are accompanied by local LSB (Labor Standard Bureau) regulators. A safety prayer (*anzen kigan*) is usually offered both at New Years (*o-shogatsu*) and during “safety week” (*anzen shukan*) in July. Presumably, a health prayer is then also offered during “health week” (*eisei shukan*) in October. The fact that Denki K.K. safety and health officials and LSB personnel go together to pray for the health and safety of workers says something about the regulatory environment in Japan, where relations between regulator and regulated are less adversarial and more cooperative. Even if this cooperation and consensus is not as simple and sincere as it might appear—insert standard discussion of *tatemae* and *honne* here—it still exerts important normative influences on the respective players’ actions.

To encourage awareness of safety hazards in the workplace, Denki K.K. practices many of the safety practices associated with Japanese industry. For example, the well-known “finger point and call” (*yubi sashi koshō*) is company policy. Moreover, it is also company policy to do “refresh gymnastics” (*rifure-shu taisō*) at 10 a.m. and 3 p.m. every day, a policy started long ago at the encouragement of administrative guidance (*gyōsei shidō*) from the Ministry of Labor. Asked about participation levels, the Manager of the Safety and Health Center responded that, since they do not record such information, he could only respond that it was 100 percent at the Safety and Health Center. Amusingly, later in our interview, I realized it was 3 p.m. and could observe employees doing the exercises but the three officials I was speaking with did not feel so inclined. In later interviews at the plant level,³² I was assured that participation was very high but that disgruntled workers would often express their dissatisfaction by doing their exercises in a lethargic manner. Denki K.K. also utilizes the “hazard prediction training” or KYT (short for *kiken yochi* training) approach,

³² Interview with the Chief Safety Specialist of Denki K.K.’s nuclear engineering department, the Group Manager of Denki K.K.’s thermal power department, and the Senior Manager Representative of the safety management group within the nuclear engineering department (May 23, 1996) [name of the people and place of interview omitted].

whereby they encourage workers to think in very simplistic terms: “Think about the situation. What could go wrong. If you feel that it is not safe, report it and improve it.”

Regarding health matters, Denki K.K. sets annual areas to focus on. Target areas include weight loss (an annual target), improving the working environment, prevent geriatric diseases (*seijin-byō*) (another expression of Japan’s fixation on the graying of its population), proper work techniques, breaks to prevent Repetitive Motion Disorder (RMD), and not over-drinking during the holidays. It is hard not to be somewhat cynical about the sincerity of health promotion activities at Denki K.K. as well as other Japanese companies because of the startling high use of tobacco amongst managers and employees alike. During one set of interviews during which we discussed Denki K.K.’s health concerns, no one ever mentioned smoking as a health risk. I intentionally redirected the conversation in this direction for over fifteen minutes, prodding for other perceived health risks, but no mention was ever made. A couple of the respondents were actually smoking as we discussed these health matters.

Activities conducted at the plant level are the heart of Denki K.K.’s approach to safety and health management. The safety and health experts of the Safety and Health Charge have three principal tasks: inspections, education, and reviewing suggestions. Once a month, during working hours, safety and health experts from the Safety and Health Charge conduct inspections (*junshi*) of the workplace. They also further safety and health education (*kyōiku*) amongst workers. In particular, they train the Deputy Manager in charge of Manufacturing (a superintendent) (*seizoku-chō*) who then educates the foreperson who then educate the workers (*jūgyō-sha*). Finally, they review workers’ suggestions regarding safety and health improvement.

Other activities include information gathering and injury and illness reporting. Information is gathered (and then disseminated by “education”) from two principal sources. Most importantly, working in close conjunction with the Safety and Health Center, they are kept abreast of the occurrence and cause of accidents within the company and the trend in government administration. Though not emphasized, they also gather information from the academic literature in the area but the literature is recommended by the Safety and Health Center and they are only interested in “effective and useful” academic work.

Their second source of information is through the local Labor Standards Bureaus.

Finally, they are responsible for reporting any accidents (or illnesses) that occur at their plants. When an accident does occur, they investigate the reasons for the calamity and devise policies to prevent a recurrence. The four-page accident report (*rōdō saigai chōsa jikoku sho*) that they fill out and send to the Safety and Health Center divides the causes of industrial accidents into three main categories: (1) unsafe situations³³, (2) unsafe acts,³⁴ and (3) defects in the management and supervision.³⁵ Within each category are sub-categories (*e.g.*, “safety protection deficiencies,”³⁶ “acts ignoring rules,”³⁷ and “deficiencies in education and direction,”³⁸ respectively). Within those are sub-sub-categories (*e.g.*, “safety institutions were unacceptable,”³⁹ “did not use safety equipment,”⁴⁰ and “insufficient education on hazardous work,”⁴¹ respectively) to which each industrial accident is assigned.

E. Workers' Compensation Insurance

Like other Japanese companies covered, Denki K.K. pays annual premiums (*hoken-ryō*) to the Workers' Compensation Fund for each of its facilities. As explained above,⁴² a basic rate (*kihon hoken ryōritsu*) is established on a nationwide basis for each industry. This rate can be reduced for good safety and health records, but in no case can the merit rate be reduced more than 40 percent of the basic rate (the “minimum merit rate”). The actual premium is then decided by multiplying the applicable rate (*tekiyō hoken ryōritsu*) (the basic rate minus the merit rate) by the number of employees in the facility. Insurance premiums are also paid for enterprises which are covered by the Traffic Accident Insurance Fund. The basic rates, applicable rates, minimum merit rates, basic premiums, actual premiums, minimum merit premiums, as well as

33 “*fuanzen na jōtai*”

34 “*fuanzen na kōi*”

35 “*kanri kantoku kekkān*”

36 “*anzen bōgo-jō no kekkān*”

37 “*kisoku mushi no kōi*”

38 “*kyōiku shidō kekkān*”

39 “*anzen jisetsu ga futeki datta*”

40 “*anzen sōchi o shiyō shinakatta*”

41 “*kiken yūgai sagyō no kyōiku fujūbun*”

42 See part I of this Note, 64, HŌSEI KENKYŪ (JOURNAL OF LAW AND POLITICS) 913-914 (March 1998).

the amount of premium saved by the merit rate and the amount of premium that could be saved by a better merit rate for each of Denki K.K.'s manufacturing facilities in Japan are given in Table 9 on the following page. Also included is each plant's accident insurance premium.

In 1994, Denki K.K. paid over \$15 million to cover workplace injuries (*gyōmu saigai*), in addition to \$4.8 million to cover traffic accidents (*tsūkin saigai*). By tabulating the remaining savings potential in a lower merit rate, Denki K.K. officials are able to put a "price tag" on injuries and illnesses. In 1994, that price tag totaled \$605,790, giving a concrete economical incentive to improve safety and health records. Remarkably, 28 of the 39 facilities have achieved the lowest insurance rates possible for their respective sectors. Only one facility (Works No. 33) is assessed a higher insurance rate (6.50) than the basic rate (5.00), reflecting poor safety and health experiences at that facility during the prior three years. The higher insurance rate resulted in paying \$39,310 more than would be required under the basic rate and, when compared to the minimum merit premium, Denki K.K. paid \$116,490 more than it would have under optimal safety and health conditions at this one plant alone.

Although most of Denki K.K.'s manufacturing facilities are subject to relatively low insurance rates, there are two exceptions. Works No. 24 is subject to the highest insurance rate within Denki K.K. (11.00) because of the hazardous substances used in its manufacturing of synthetic resins and parts for plastic surgery. Works No. 27 has the next highest rate (10.00) because it produces such items as steam, gas, and nuclear turbines, as well as nuclear reactors themselves. Both, however, are close to achieving the minimum merit rate. Works No. 24 was assessed a rate of 7.70, just above the 6.60 minimum merit rate, resulting in payments of only \$4,690 in excess of the minimum possible amount. Works No. 27 had a rate of 6.50 applied in 1994, only 0.50 more than the minimum 6.00. This resulted in paying \$14,300 in "excess" premiums. (The reason Works No. 27 paid more in premiums despite having a lower insurance rate than Works No. 24 is simply due to the number of employees.)

In addition to the compensation provided by the insurance fund, Denki K.K. pays an additional amount of money to victims or their survivors. These payments are called "sympathy money" (*mimai-kin*). These additional pay-

Table 9: Denki K.K.'s Merit Rating and Accident Compensation Insurance Payments, 1994

Works	Insurance Rates			Work-Related					Traffic-Related
	Basic Rate	Actual Rate	Minimum Merit	Basic Premium ^a	Actual Premium	Minimum Merit Premium	Amount Saved by Merit	Remaining Potential Savings by Merit	Premium
1	5.00	3.00	3.00	4,358.60	2,615.16	2,615.16	1,743.44	0.00	871.72
2	5.00	3.00	3.00	334.57	200.74	200.74	133.83	0.00	66.91
3	5.00	3.00	3.00	334.57	148.24	118.59	49.41	29.65	39.53
4	5.00	3.00	3.00	171.37	102.82	102.82	68.55	0.00	34.27
5	5.00	3.00	3.00	106.64	63.99	63.99	42.66	0.00	21.33
6	3.00	3.00	3.00	37.57	37.57	27.57	0.00	0.00	12.52
7	5.00	3.00	3.00	125.77	75.46	75.46	50.31	0.00	25.15
8	5.00	3.00	3.00	73.39	44.04	44.04	29.36	0.00	14.68
9	5.00	3.00	3.00	56.92	34.15	34.15	22.77	0.00	11.38
10	5.00	3.00	3.00	88.38	53.03	53.03	35.35	0.00	17.68
11	5.00	-	-	51.65	-	-	51.65	0.00	10.33
12	5.00	3.00	3.00	318.54	191.12	191.12	127.42	0.00	63.71
13	5.00	3.00	3.00	792.94	475.76	475.76	317.18	0.00	158.59
14	5.00	3.00	3.00	684.72	410.83	410.83	273.89	0.00	136.94
15	5.00	3.00	3.00	2,441.90	1,465.14	1,465.14	976.76	0.00	488.38
16	5.00	3.25	3.00	676.15	439.50	405.69	236.65	33.81	135.23
17	5.00	3.00	3.00	909.71	545.82	545.82	363.88	0.00	181.94
18	5.00	3.00	3.00	1,000.31	600.19	600.19	400.12	0.00	200.06
19	5.00	3.00	3.00	685.20	411.12	411.12	27.408	0.00	137.04
20	5.00	3.00	3.00	637.02	382.21	382.21	254.81	0.00	127.40
21	5.00	3.25	3.00	376.36	244.64	225.82	131.73	18.82	75.27
22	5.00	3.00	3.00	221.98	133.19	133.19	888.79	0.00	44.40
23	5.00	3.75	3.00	206.18	154.64	123.71	51.55	30.93	41.24
24	11.00	7.70	6.60	46.93	32.85	28.16	14.08	4.69	4.27
25	5.00	3.00	3.00	799.64	479.78	479.78	319.86	0.00	159.93
26	5.00	3.25	3.00	1,326.58	862.28	795.95	464.30	66.33	265.32
27	10.00	6.50	6.00	286.03	185.92	171.62	100.11	14.30	28.60
28	5.00	3.00	3.00	594.17	356.50	356.50	237.67	0.00	118.83
29	5.00	3.25	3.00	806.93	524.50	484.16	282.42	40.35	161.39
30	5.00	3.00	3.00	349.39	209.63	209.63	139.76	0.00	69.88
31	5.00	3.00	3.00	507.47	304.48	304.48	202.99	0.00	101.49
32	5.00	3.00	3.00	1,382.94	829.76	829.76	553.18	0.00	276.59
33	5.40	6.50	3.24	192.96	232.26	115.77	-39.31	116.49	35.73
34	3.00	3.00	1.80	367.21	367.21	220.32	0.00	146.88	122.40
35	5.00	3.00	3.00	514.34	308.61	308.61	205.74	0.00	102.87
36	5.00	3.00	3.00	506.91	304.15	304.15	202.76	0.00	101.38
37	5.00	3.00	3.00	677.18	406.31	406.31	270.87	0.00	135.44
38	5.00	3.00	3.00	913.84	548.30	548.30	365.53	0.00	182.77
39	5.00	5.00	3.00	258.88	258.88	155.33	0.00	103.55	51.78
Average	-	-	-	617.56	385.66	370.13	231.90	15.53	123.96

Source: Denki K.K., unpublished documents.

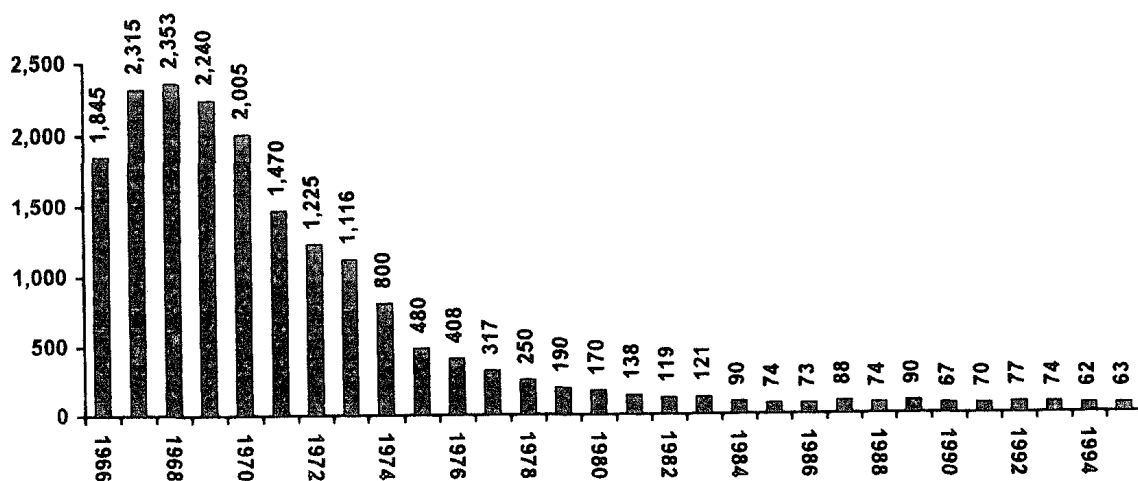
^aIn thousands of dollars (exchange rate: ¥100=\$1)

ments are not required by law. They are the result of company-union discussions in the 1950s and, more importantly, a result of *yoko narabi*—the phenomenon of large companies trying to stay abreast with each other in terms of benefits, working conditions, and other standards. In principle, the calculation formula is as follows: [salary x severity⁴³ x duration of absence⁴⁴]. In practice, however, Denki K.K. also factors in an additional variable, something they intriguingly label “alpha.” “Alpha” is not public information nor is it discussed openly, but it is a common practice in Japanese firms. According to my informants, alpha includes at least the following: (1) degree of importance (*jūyōdo*); (2) loyalty (*chūsei-shin*); (3) work attitude (*gimu taido*); (4) years of experience (*keiken nen’su*); and (5) achievements (*gyōseki no hakkido*).

F. Safety and Health Records

Denki K.K. has experienced a remarkable decline in its injury and illness levels over the past thirty years, as have most large Japanese corporations. The number of deaths, total injuries and illnesses, lost-work injuries and illnesses, and lost workdays are shown in Table 10 on the following page. Also given are the incidence rates for all injuries and illnesses and for lost-work injuries and

Figure 13: Longitudinal Injury and Illness Trends at Denki K.K., 1966–1995



43 “*jūshōdo*”

44 In cases of death, the duration is calculated in the same manner as workers’ compensation benefits are. Thus, if there is only one survivor, then duration is assessed at 153 days; if two survivors, then 193 days, if three survivors, then 245 days.

Table 10: Injury and Illness Experience at Denki K.K., 1966–1995

Year	Number of Workers	Total Labor Hours (1,000s)	Number of Deaths	Total Number of Injuries and Illnesses	Number of Lost-Work Injuries and Illnesses	Number of Lost Workdays ^a	Total Injury and Illness Incidence Rate ^b	Lost-Work Injury and Illness Incidence Rate ^c	Severity Rate ^d
1966	57,337	129,012	1	1,845	116	4,469	14.30	0.90	0.035
1967	62,525	144,558	2	2,315	118	3,369	16.01	0.82	0.023
1968	67,317	152,291	2	2,353	155	4,242	15.45	1.02	0.028
1969	72,008	160,555	0	2,240	161	6,960	13.95	1.00	0.043
1970	76,462	163,232	5	2,005	167	6,354	12.28	1.02	0.039
1971	70,469	146,961	5	1,470	124	5,389	10.00	0.84	0.037
1972	66,566	140,705	1	1,225	115	3,544	8.71	0.82	0.025
1973	67,632	143,897	3	1,116	101	3,911	7.76	0.70	0.027
1974	65,628	131,154	3	800	96	5,074	6.10	0.73	0.039
1975	59,685	119,626	0	480	47	2,147	4.01	0.39	0.018
1976	57,115	118,267	0	408	42	1,463	3.45	0.36	0.012
1977	55,839	114,464	2	317	43	1,830	2.77	0.38	0.016
1978	63,862	134,246	2	250	39	1,561	1.86	0.29	0.012
1979	64,575	137,895	1	190	34	1,129	1.38	0.25	0.08
1980	65,160	140,210	1	170	36	1,792	1.21	0.26	0.013
1981	65,964	140,716	0	138	21	1,227	0.98	0.15	0.009
1982	66,539	146,207	0	119	25	965	0.81	0.17	0.007
1983	68,606	151,996	0	121	26	1,418	0.80	0.17	0.009
1984	72,549	158,940	0	90	18	825	0.57	0.11	0.005
1985	73,998	157,140	0	74	19	469	0.47	0.12	0.003
1986	74,050	159,111	0	73	18	587	0.46	0.11	0.004
1987	73,596	160,227	0	88	22	879	0.55	0.14	0.005
1988	73,625	160,666	0	74	18	424	0.46	0.11	0.003
1989	73,006	158,988	1	90	25	1,294	0.57	0.16	0.008
1990	75,495	163,962	1	67	19	807	0.41	0.12	0.005
1991	77,862	162,971	0	70	20	974	0.43	0.12	0.006
1992	78,447	156,275	2	77	16	836	0.49	0.10	0.005
1993	77,317	150,416	0	74	18	731	0.49	0.12	0.005
1994	75,656	147,667	0	62	17	381	0.42	0.12	0.003
1995	73,253	139,279	0	63	11	212	0.45	0.08	0.002
Average	69,071.4	146,387.8	1.1	615.5	56.2	2,175.4	4.25	0.39	0.015

Source: Denki K.K., unpublished documents.

^aNot factoring in fatalities.

^bNumber of injuries and illnesses per million hours worked.

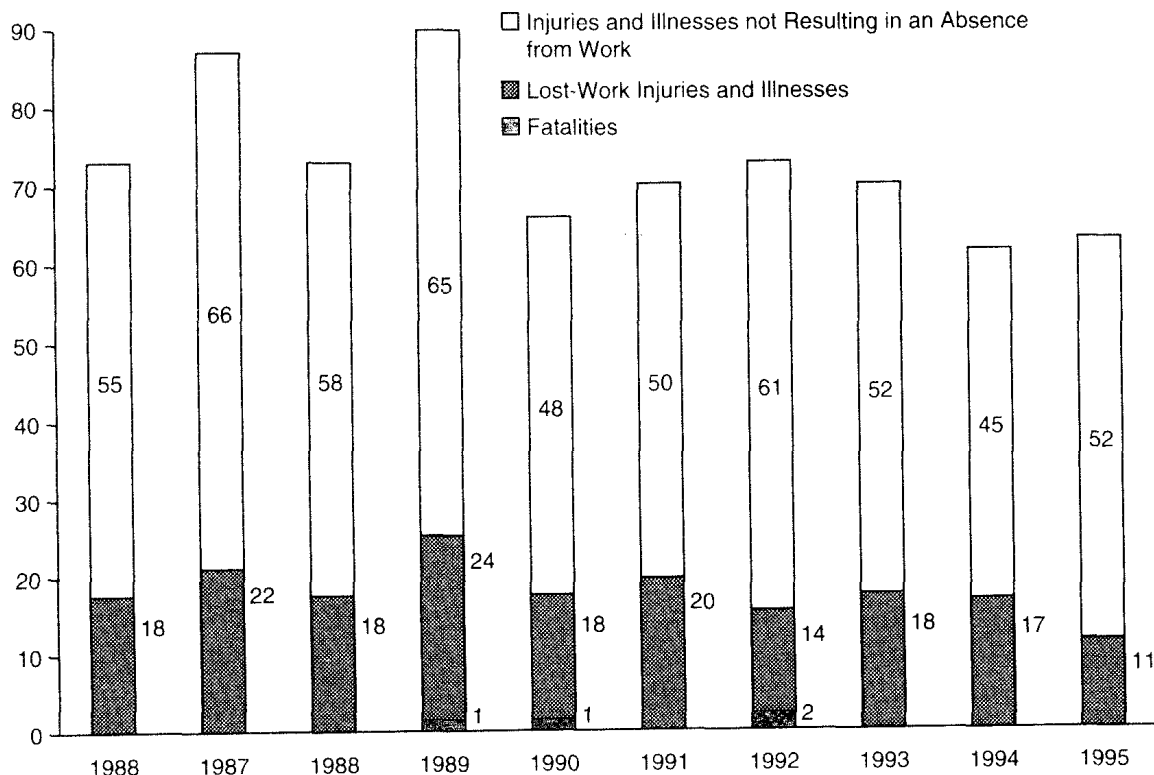
^cNumber of injuries and illnesses resulting in an absence from work for one or more days per million hours worked.

^dNumber of lost workdays due to injuries and illnesses per thousand hours worked.

illnesses, as well as the severity rate. Again, what is so striking about these figures is not only the fact that injuries and illness have consistently decreased at Denki K.K., but the rate at which they have decreased, especially in the 1970s. Figure 13 on the previous page illustrates this downward longitudinal trend.

The decrease in injuries and illnesses first slows down in the late 1970s and early 1980s and then levels off in the mid-1980s. Isolating the most recent ten-year period from 1986 to 1995 allows for a better understanding of current injury and illness trends at Denki K.K. On average, Denki K.K. experienced 73.8 total injuries per year, with a high of 90 in 1989 and a low of 62 in 1994.⁴⁵ Of these, an average of only 18.4 resulted in an absence from work, with a high of 25 in 1989 and a low of 11 in 1995.⁴⁶ During this same period, only four fatalities are recorded, which are, of course, included in the lost-work injury data. All four, however, did not occur at the workplace, but were commuting accidents.

Figure 14: Recent Injury and Illness Experience at Denki K.K., 1985 to 1995



Source: Denki K.K., unpublished documents

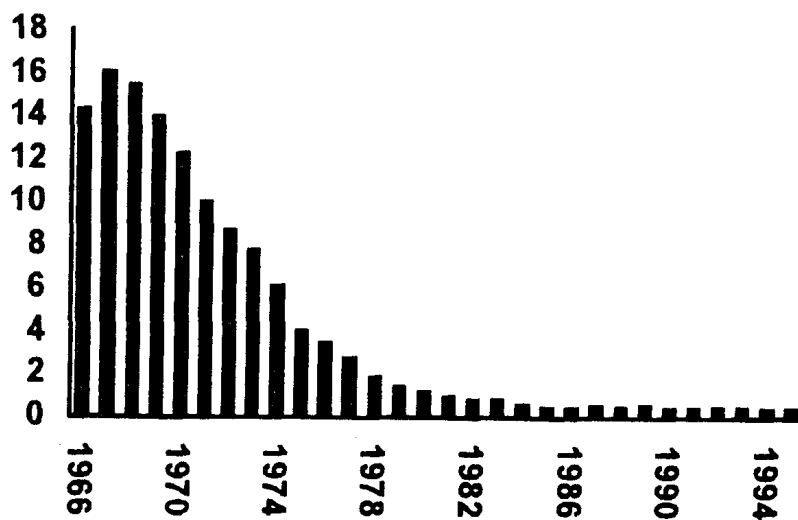
⁴⁵ There is a discrepancy in the data obtained from Denki K.K.. In one document received from the Safety and Health Center, the total number of injuries and illnesses in 1994 was listed as 61 instead of 62.

⁴⁶ The same document contained two other discrepancies: lost-work accidents for 1993 were recorded as 22 (instead of 18), and for 1994 were recorded as 16 (instead of 17).

These statistics are shown in Figure 14 on the previous page.

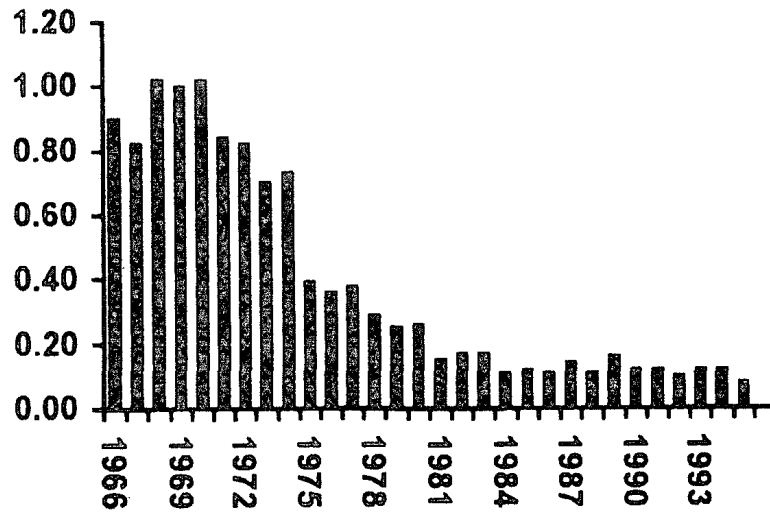
As Table 10 shows, the total number of injuries and illnesses per million hours worked (incidence rate) at Denki K.K. reached a peak in 1967 at 16.01. Except for minor increases in five of the years, the incidence rate has declined ever since, as illustrated in Figure 15. Last year, there were only 0.45 reported injuries for every million hours worked. In other words, only 1 injury or illness was reported for every 2.2 million hours worked at Denki K.K. That's only 1 injury or illness for every 1,100 employees. The 1995 rate was an impressive 97 percent lower than the 1966 rate.

Figure 15: Decline in Total Injury and Illness Incidence Rates at Denki K.K., 1966-1995



Denki K.K. has also experienced a precipitous decline in lost-work injury and illness incidence rates. See Figure 16 on the following page. In 1967, Denki K.K. experienced a relatively low 0.90 lost-work injuries and illnesses per 1 million hours worked. In 1995, that number was 0.08. This represents a decline of 81 percent from the 1966 level, with the single biggest decline occurring between 1974 (0.73) and 1975 (0.39), a 47 percent plunge.

Figure 16: Decline in Lost-Work Injury and Illness Incidence Rates at Denki K.K., 1966-1995



Severity rates have also declined by a steep margin. In 1966, the rate of lost workdays per hundred hours worked was 0.035 while the 1995 rate was 0.002, a 94 percent drop. However, this data, provided by Denki K.K. safety and health management, does not appear to charge extra lost-work days to a fatality. The severity rate, and its year-to-year variance, changes drastically when 7,500 lost workdays are assigned to each fatalities. Adjusted lost workday data and severity rates are given in Table 11 on the following page.

Figure 17: Adjusted Severity Rate Trends and Regression Curves for Denki K.K., 1966-1995.

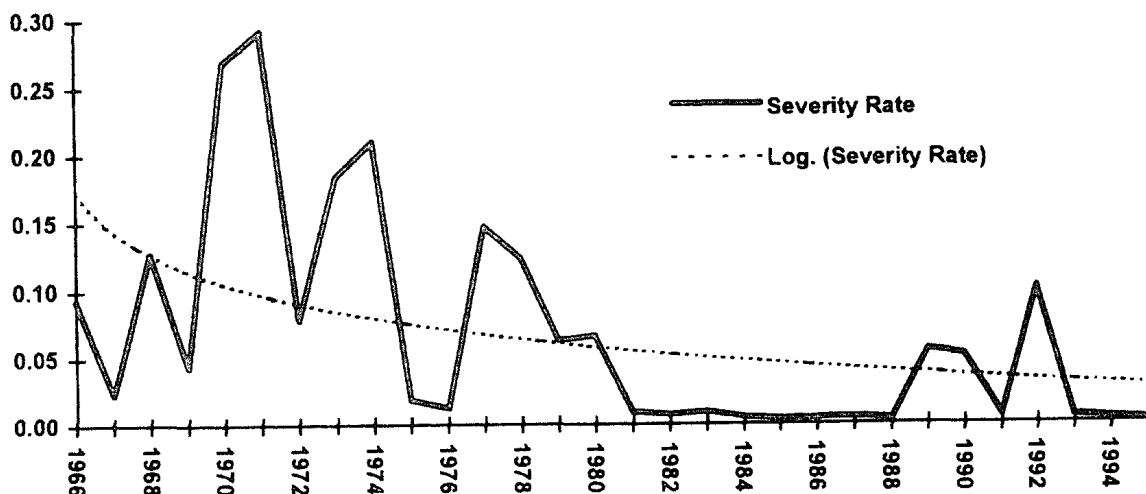


Table 11: Adjusted Lost Workdays and Severity Rates for Denki K.K., 1966-1995

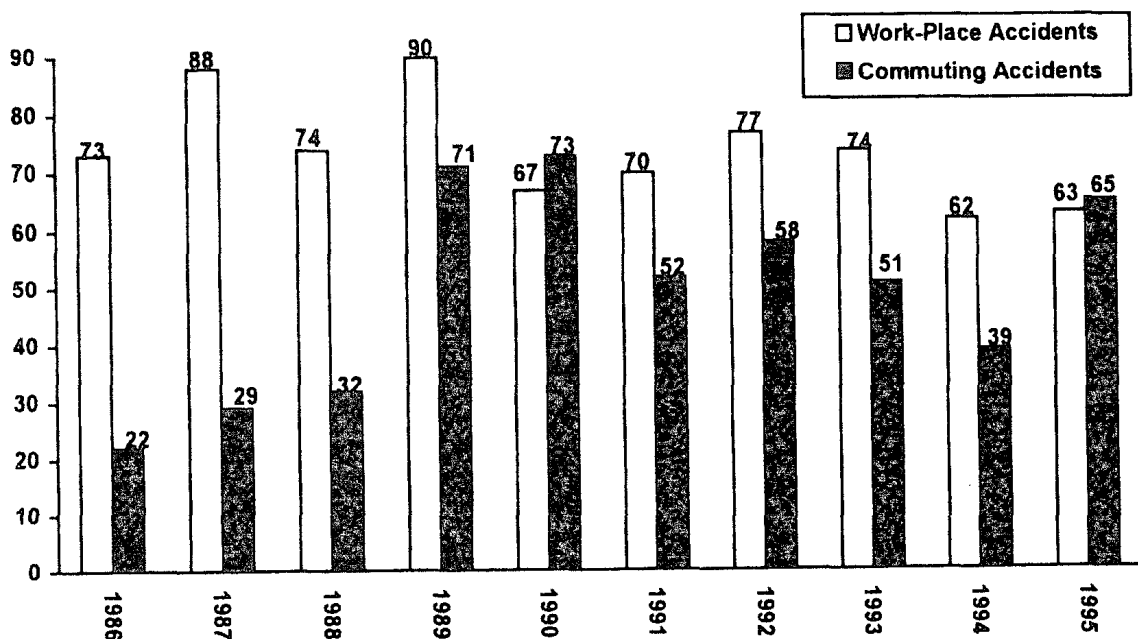
Year	Total Labor Hours (1,000s)	Number of Deaths	Number of Lost Workdays ^a	Severity Rate ^b
1966	129,012	1	11,969	0.093
1967	144,558	2	18,369	0.023
1968	152,291	3	26,742	0.127
1969	160,555	0	6,960	0.043
1970	163,232	5	43,854	0.269
1971	146,961	5	42,889	0.292
1972	140,705	1	11,044	0.078
1973	143,897	3	26,411	0.184
1974	131,154	3	27,574	0.210
1975	119,626	0	2,147	0.018
1976	118,267	0	1,463	0.012
1977	114,464	2	16,830	0.147
1978	134,246	2	16,561	0.123
1979	137,895	1	8,629	0.063
1980	140,210	1	9,292	0.066
1981	140,716	0	1,227	0.009
1982	146,207	0	965	0.007
1983	151,996	0	1,418	0.009
1984	158,940	0	825	0.005
1985	157,140	0	469	0.003
1986	159,111	0	587	0.004
1987	160,227	0	879	0.005
1988	160,666	0	424	0.003
1989	158,988	1	8,794	0.055
1990	163,962	1	8,307	0.051
1991	162,971	0	974	0.006
1992	156,275	2	15,836	0.101
1993	150,416	0	731	0.005
1994	147,667	0	381	0.003
1995	139,279	0	212	0.002
Average	146,387.8	1.1	10,425.4	0.067

^aEach fatality is charged as 7,500 lost days.^bLost workdays per thousand hours worked.

Adjusted data results in more accurate severity rates. But despite the adjustment upwards of the severity rate to reflect fatalities, logarithmic regression analysis reveals that the same downward longitudinal trends exhibited by incidence rates are present in Denki K.K.'s severity rates also. Figure 17 above illustrates these trends.

Officials at Denki K.K. disagree as to what the major explanatory factor is for the decline in industrial accidents and illnesses over the past thirty years. When asked, one official immediately responding that it was the passage of ISHA in 1972 that exerted the single largest effect on industry and Denki K.K. safety and health records. The Manager of the Safety and Health Center disagreed. He felt that *yoko-narabi* (staying abreast of your peers) was the biggest reason for the improvements in safety and health and that the law was as much a reflection of changing priorities as an influence. Specifically, he felt that increased training and education of the foreperson regarding workplace safety and health (actually required by ISHA) and ergonomic improvements in each machine that were a result of voluntary workers' suggestions, had the biggest impact. The mantra "good relations between workers and management

Figure 18: Work-Related and Traffic Accidents at Denki K.K., 1986 to 1995



Source: Denki K.K., unpublished documents.

Table 12: Incidence Rates at Denki K.K. and Total Japanese Industry, 1968-1988.

Year	Japanese Industry Incidence Rates ^a	Denki K.K. Incidence Rates
1968	2.22	1.02
1969	2.07	1.00
1970	1.84	1.02
1971	1.63	0.84
1972	1.45	0.82
1973	1.33	0.70
1974	1.02	0.73
1975	0.95	0.39
1976	0.87	0.36
1977	0.86	0.38
1978	0.78	0.29
1979	0.73	0.25
1980	0.72	0.26
1981	0.65	0.15
1982	0.60	0.17
1983	0.61	0.17
1984	0.55	0.11
1985	0.50	0.12
1986	0.47	0.11
1987	0.44	0.14
1988	0.42	0.11
Average	0.99	0.44

Source: Denki K.K. data: Denki K.K., unpublished documents; Japanese industry data: RICHARD E. WOKUTCH, WORKER PROTECTION, JAPANESE STYLE, 206 (1992), from JAPAN INSTITUTE OF LABOUR (1982 and 1988); JAPAN INDUSTRIAL SAFETY AND HEALTH ASSOCIATION (1988 and 1989).

^aNumber of injuries and illnesses resulting in an incapacity to work for one or more days (not including the day of the accident) per 200,000 hours worked.

^b Number of injuries and illnesses resulting in an incapacity to work for an unspecified number of days per 200,000 hours worked.

and management improves safety and health which improves productivity” was then recited.

In addition to the data presented above, Denki K.K. also keeps records, presented on the previous page in Figure 18, of traffic accidents wherein their employees are injured. Denki K.K. began recording such information in 1986 (the first year so required by law) for the purposes of compensation. In the past

ten years, 492 Denki K.K. employees have been injured in traffic accidents, an average of 49.2 per year, less than the average number of workplace accidents during the same period (73.8).

Table 12 on the previous page lists injury and illness incidence rates for the Japanese economy as a whole and for Denki K.K. alone. The figures have been adjusted to facilitate cross-national comparisons and maintain congruity with the data in Table 11. Comparing Denki K.K.'s average incidence rates with those of the Japanese economy as a whole reveals a stark contrast. While Japanese industry as a whole experiences an average of 4.96 injuries or illness per million hours worked (adjusted rate of 0.99), Denki K.K. only experiences an average of 2.2 (adjusted rate of 0.44). According to these statistics, the average incidence rate for all Japanese industry is more than twice as high as Denki K.K.'s average rate. Of course, since Denki K.K. data does not include such high-risk industries as construction, which are included in the Japanese data, comparisons become less educational. What is needed is injury and illness information for the electronics industry alone. Unfortunately, however, I have not yet obtained such information.

There is an important qualification that affects the validity of the above data. The data for all of Japanese industry was collected by a Ministry of Labor survey and included all injuries and illnesses that resulted in at least one lost day of work. It is unclear whether Denki K.K.'s data is along the same parameters or if, more likely, it is limited to illnesses and injuries that result in four or more lost days of work, the typical record maintained in corporate Japan because of workers' compensation thresholds.

One final observation about Denki K.K.'s safety and health experience is warranted. In assessing the overall health and safety records of Japanese enterprises, it became clear that fewer non-fatal injuries were reported in Japan than in the United States. The United States had an average injury-to-fatality ration of 926:1 whereas Japan's was only 142:1. I will now analyze Denki K.K.'s records to see if the same patterns are discernible.

Since the data sample is so small, *i.e.*, just Denki K.K., it becomes impossible to compare injury-fatality ratios on a year-to-year basis. (Denki K.K. did not suffer a single fatality during the five-year period analyzed above.) Rather, I will determine Denki K.K.'s injury-fatality ratio based on the company average

of the past thirty years (instead of taking the average of yearly ratios, as was done above). The data bias that results from mismatching data samples is understood but given the patterns that are being tested (excessively low injury-fatality ratios), the fact that data dates back thirty years, when more fatalities were suffered, may actually strengthen the results of the analysis.

Calculations show that Denki K.K. experienced 78 lost-work injuries and illnesses per 200 million hours worked (average incidence rate per million hours worked (0.39) multiplied by 200). At the same time, its average fatality rate (0.0075 fatalities per million hours worked) means that only 1.5 deaths are suffered during the same 200 million hours worked. This results in a 78:1.5, or a 52:1, injury-fatality ratio. In other words, for every 52 lost-work injuries that occur at Denki K.K., one results in a death. Furthermore, if we only look at the most recent twenty years (1976-1995), Denki K.K.'s injury-fatality ratio decreases to almost 49:1; only looking at the past ten years (1986-1995), the ratio drops to 46:1.

This ratio is startling. Japan as a whole records a 142:1 injury-fatality ratio, and as discussed above, is subject to doubt. Denki K.K., meanwhile, has a ratio almost a third of the Japanese ratio. Again, high-risk industries that Denki K.K. does not participate in will skew the data but the contrast remains strong. Regardless of comparisons with the rest of Japanese industry, let alone with the United States, the injury-fatality ratio at Denki K.K. tells us that accidents at Denki K.K. are serious stuff. An injured worker at Denki K.K., statistically, is more likely to die than the average injured worker, Japanese or American.

Putting sarcasm aside, a more helpful explanation returns to the idea of underreporting of injuries and illnesses. The rough analysis done on Denki K.K. statistics strongly suggests that many minor injuries and illness at Denki K.K. go unreported. It has commonly been attributed to Japanese workers that they are less likely to take personal time off than their American counterparts. Whatever the reasons for this proclivity, the same factors would probably exert similar pressure to not take time off for minor occupational injuries or illnesses. This is the most likely explanation for Denki K.K.'s extremely low injury-fatality ratio.

VIII. CONCLUSIONS

Occupational safety and health regulations date back to the late 19th century in Japan, but it was not until 1972, with the passage of the Industrial Safety and Health Act, that a comprehensive framework was established and health and safety concerns became a priority for Japanese firms. The law, although focused exclusively on industrial safety and health, was built upon the broad labor regulatory framework established by the Labor Standards Act in 1947. As a result, the Labor Standards Bureau is distinguished from the Occupational Safety and Health Administration by its broad mandate and scope of coverage.

Regulatory approaches in Japan and the United States also differ. The U.S. system is consumed with establishing the legal mechanisms for compliance and dispute settlement, and defining rights of the participants. This is a natural outgrowth of the adversarial regulatory system prevailing in the United States. The Japanese regulatory approach, on the other hand, is behavior-oriented. Especially evident is the reliance on norm-creating, behavior-modifying “education”. Japanese regulators do not often try to “big stick” compliance; rather, the goal is to reach an agreement as to what should be done. The regulators certainly have the upper hand in this process but this approach affords certain leniency to the regulated. What emerges from this quiet battle of wills is a “consensus” as to where the boundaries are in the compliance and avoidance game.

One expression of this consensus tenet is the requirement in ISHA to establish safety and health committees in most enterprises. Labor-management dialectic, this time with management (the regulated) having the stronger bargaining position, is expected to be facilitated through this channel and mutual “education” is the expected result. In short, the Japanese regulatory approach is people-centered, aiming to achieving safer working conditions by modifying workers’ and management’s’ behavior.

There are some important differences in the powers and authorities available to inspectors in the United States and Japan. At times, LSB inspectors appear to have more outright power (for example, the right to enter the workplace without a search warrant, the right to issue stop orders immediately, etc.); other times, OSHA inspectors appear to have more coercive power (for

example, the right to issue pecuniary sanctions (fines) on the spot). What is clear, however, is that LSB inspectors have more coercive powers than previously thought. With their ability to issue immediate stop use orders, LSB inspectors wield a tremendous amount of power, one that has a behavior-modifying effect on the regulated. The stop use order is also the functional equivalent of a pecuniary sanction, thus making existing comparisons of the monetary amount of sanctions unreliable.

One theme that appears repeatedly when assessing the activities of the respective regulatory agencies is the different political environments in which they operate. Occupational safety and health in Japan is largely non-political, both in terms of politicians and labor (the connection is not missed). One result of this is that staffing levels have increased each year in Japan, though the rate of increase has slowed down considerably in the last decade. OSHA, on the other hand, is beset and afflicted by constantly changing political currents which affect their ability to effectively enforce the law. One of the more unfortunate results of this situation, in my opinion, is the normative undermining of the regulatory regime. U.S. enterprises make decisions regarding safety and health under the schizophrenic paradox of strong legal sanctions in an adversarial system coupled with a political environment and discourse that undermines the normative effect of the law. What does the possibility of strong punitive sanctions matter if the enforcement agency changes its citation thresholds and amount of fines at the prompting of political leaders? What will the regulated entity determine to be more cost-effective, compliance or lobbying?

Comparisons of overall health and safety records in the United States and Japan, troubled as they are by extraneous variables, do seem to indicate that Japan has a superb record. What can probably be said with assurity is that Japan's modern safety and health record is no worse than the United States'. This is a very important step in calculating comparative costs and benefits because, although not discussed herein, it is generally conceded that the U.S. regulatory system imposes higher costs on regulated entities. Thus, support for the legalistic regulatory approach of the United States will have to find other grounds of support than denigrating other systems' results.

The single biggest concern raised by an analysis of Japan's injury and illness data relates to the strong possibility that underreporting of injuries and illnesses

in Japan is widespread. More research could be conducted into this problem, more carefully controlling for errors in the data samples and broadening the scope to include other industrially advanced countries.

By focusing on a single corporation in Japan, Denki K.K., many of the legal mandates outlined in the law and in this paper were brought to life and given form. It also helped demonstrate some of the ways in which the costs and benefits of regulatory compliance can be calculated. The single largest shortcoming of this study, however, was the exclusive focus on one large Japanese company. By doing so, this work has conveniently ignored complicating factors, such as ISHA's provisions governing a master contractor's duties and responsibilities towards its subcontractors, and case law holding master employers liable for injuries suffered by employees of its subcontractors. Much work needs to be done in this area to better understand the true nature of industrial safety and health in Japan.

Denki K.K. also displayed an exceedingly low injury-fatality ratio, forcing the conclusion that some injuries and illnesses go unreported at Denki K.K. As above, much more research needs to be done in this area to confirm the existence, and understand the nature, of such underreporting. I suspect that, in large, the skewed ratios arise from individual workers choosing to not report but even so, a better understanding of the environment that results in such behavior is essential for understanding the overall safety and health environment in Japan.