Harvard Journal of Law & Technology
Volume 11, Number 2 Winter 1998

HAZARDS OF THE JOB: FROM INDUSTRIAL DISEASE TO ENVIRONMENTAL HEALTH SCIENCE

By Christopher C. Sellers.[1]
Chapel Hill, N.C.: University of North Carolina Press. 1997.
<http://sunsite.unc.edu/uncpress>
Pp. 331. $45.00 (hard). ISBN 0-8078-2314-7.

The second half of the nineteenth-century in the United States was a period of rapid and unwieldy industrial expansion. As the technological developments and economic opportunities presented to capitalists dominated American society, the adverse side effects that they inevitably caused were left unquestioned. One such negative impact of industrialization was the proliferation of "industrial disease," maladies and sicknesses attributed to workplace conditions which posed heretofore unknown hazards to the human body. Christopher C. Sellers discusses the development of the science of industrial disease and its political and social implications in *Hazards of the Job: From Industrial Disease to Environmental Health Science.*

Despite the common occurrences of industrial diseases, such as silicosis in mines and lead poisoning in industrial plants across the country (pp. 14-18), they had not, by the 1880s, become a subject of serious debate or concern among government officials and medical professionals. In addition to the fact that many symptoms of industrial diseases could often be attributed to causes unrelated to the workplace (pp. 21-22), the science of occupational disease was especially slow to develop in the United States because of the American worker culture of "toughing it out" (p. 22), the widespread mistrust of doctors (pp. 24-25), and the indifference and ignorance among capitalists and factory managers (pp. 26-28). Furthermore, enjoying an already large labor market reinforced by a steady flow of immigrant workers, most corporate owners used worker turnover to solve the economic threat posed by industrial hazards (pp. 26, 28).

The wide geographic dispersal of American industries, combined with the focus that nineteenth-century medical schools based on local clinical practice, precluded a systematic and standardized understanding of occupational disease (pp. 31-32). Due to the inaccessibility of private

---

1. Christopher C. Sellers is Assistant Professor of History at New Jersey Institute of Technology and Rutgers University at Newark.

medicine to most workers, clinical evidence was extremely scarce. Furthermore, private practitioners faced an economic dilemma: to give a diagnosis of occupational disease likely meant a significant reduction of the patient's income and, consequently, the patient's ability to pay for medical care (p. 34).

According to the author, the laissez-faire legal doctrines of freedom of contract, assumption of risk, and the fellow-servant rule,[2] as well as the prevailing belief that occupational diseases were inevitable and natural to the workplace, stifled any attempts by frustrated workers to seek vindication in the legal arena, and insulated corporations against serious threats of liability (pp. 34-35). Starting around 1890, however, efforts by labor organizations, such as the Knights of Labor, resulted in some changes to employer liability laws, followed by improved standards for workplace conditions (p. 37). Many state governments responded by establishing bureaus of labor and of labor statistics, which provided heightened public scrutiny of corporate officials (p. 37). These changes provided the backdrop for subsequent reforms.

In narrating the history of "industrial hygiene" — a term used to encompass the medical, scientific, and engineering body of knowledge regarding the causes, effects, and prevention of occupational hazards — Sellers focuses on the strategies and accomplishments of several professionals and institutions to overcome the initial barriers described above. Perhaps the figure whom Sellers admires most is Alice Hamilton. Facing gender discrimination in the medical profession, she took a more political and less traditional approach to her career, evidenced by her involvement with Hull House in Chicago (p. 74). In the absence of effective regulatory sanctions, she employed a knowledge-based "disciplinary power"[3] to effect change (p. 99). Through her investigations in the early 1910s at white lead plants such as the Wetherill factory in Philadelphia (pp. 69, 89-90), Hamilton compiled a wide array of revealing statistics and amassed a great deal of knowledge regarding various occupational diseases, especially lead poisoning. She assumed that most corporate owners were unaware of the extent to which occupational hazards persisted in their factories and the preventive measures at their disposal, and hoped that the new-found revelations and knowledge would awaken their consciences toward voluntary reform (pp. 89-91, 93). She also tried to influence corporate behavior by continual use of public opprobrium, cajoling, and

---

2. If a fellow worker contributed to the hazard from which the plaintiff worker suffered, the defendant employer could be relieved of liability (p. 35).

3. In contrast to other forms of power whose sources lie in law, disciplinary power has its source in expertise and knowledge (p. 99).

comparisons (pp. 90-92). As most of her work was based on worker testimonies and visual inspections, however, skeptics found it relatively easy to dispute Hamilton's claims by providing alternate explanations (p. 95). Despite these fundamental difficulties in her strategies, she made very significant contributions, bringing about measurable changes, raising the public awareness, and breathing a vision of social purpose into the burgeoning science of occupational health.

If Alice Hamilton was the first professional with a social vision in the field of industrial disease, David Edsall was the first to develop it as a theoretically sound science. Through his extensive research into European literature on the subject (p. 54) and his own clinical investigations, he sought to raise the level of understanding of and interest in industrial disease within the medical profession (pp. 56-57). Edsall's goals were to arouse a sense of social obligation among physicians and to bring about an enhanced reputation for his profession (p. 142). Thus, unlike Hamilton, he almost exclusively targeted his efforts at other physicians and scientists. He later became the leader of industrial hygiene research at Harvard (p. 142), which formed the center of occupational disease studies from the 1920s on.

Through the combined efforts of medical professionals, labor organizations, and reform activists, the decade of the 1910s saw a dramatic increase in government involvement in the workplace. For example, by 1915, twenty-three states guaranteed no-fault compensation for workers suffering from injuries or diseases caused by the workplace (p. 111). The increasingly stringent liability laws and the burden of public opprobrium spurred many companies to hire their own physicians (p. 111). Sellers explains that these corporate physicians created additional barriers to the developing science of industrial hygiene, as they were used by corporate officials to weed out workers most susceptible to workplace hazards and to identify sick workers as early as possible (pp. 111-12). Due to the lack of employment contracts and enforceable regulatory standards for working conditions, companies sought to minimize the state-sanctioned costs of liability by screening and often firing their workers (pp. 112-22).

Against this unfavorable backdrop, the United States Public Health Service assigned Joseph Schereschewsky to a new project on "vocational diseases" in 1914 (p. 121). Schereschewsky's attempt to solidify the research efforts of earlier professionals by conducting a comprehensive study in a more objective setting than the workplace ultimately failed (pp. 124, 130-34). Although he partially alleviated the problems posed by corporate physicians by setting up independent laboratories where sick workers could be tested and treated (p. 123), his complete detachment from the actual workplace and his professional

elitism alienated corporate officials and closed off the avenues of personal influence which Alice Hamilton had used (pp. 135-37). In addition, Schereschewsky ascribed bacterial causes to many symptoms of industrial disease, thereby perpetuating the tendency to belittle the causal link between disease and the workplace (p. 133). Sellers states that the research on the New York garment industry, Schereschewsky's main project at the Public Health Service, was too broad and exhaustive, both in its goals and in its scope, to serve as a practical model (pp. 123-39). As the author later explains, although Schereschewsky's vision of a comprehensive study of industrial hygiene did not materialize, his detached and theoretical perspective was embraced by American scientists in the 1920s and beyond.

During the late 1910s and the 1920s, David Edsall and other researchers at Harvard were able to assemble the research program of industrial hygiene that Schereschewsky once envisioned (pp. 142-44). Around the same time, corporate managers came to view medicine as a potentially profitable area of expertise, primarily because the shrinkage of the labor force during World War I and new restrictions on immigration exacerbated the cost of labor turnover (p. 145). Capitalizing on this new corporate interest in medical research, Edsall proposed an autonomous role for the medical profession in "the conflict between labor and capital" (p. 149). Through his leadership, Harvard Medical School — and later the Harvard School of Public Health — garnered substantial funding from corporate America (pp. 155-56, 160, 172). Harvard quickly became the center of industrial hygiene, attracting such scholars as Cecil Drinker,[4] Philip Drinker,[5] Joseph Aub,[6] and even Hamilton. By combining the efforts of medical scientists, physicians, chemists, and sanitary engineers, Harvard created a centralized, focused, synergistic, and organizational approach to studying industrial disease, contrasted with the earlier individual efforts of Hamilton and Edsall. Following the vision of Schereschewsky, researchers at Harvard took a laboratory approach to studying the workplace (p. 167). To establish the validity of their science and also to reassure corporate officials, they not only removed themselves physically from the workplace, but eschewed political and social controversies and strove to maintain their unbiased status as disinterested investigators (pp. 144, 173). Compared with the breadth of

4. Cecil Drinker was a physiologist who led many animal experiments and served as a liaison with corporate officials (pp. 144, 157, 179).

5. Philip Drinker, Cecil's brother, was an engineer with Edsall's team at Harvard (pp. 164-65).

6. Joseph Aub was a clinical scientist (p. 144).

Schereschewsky's garment industry study, the new methods at Harvard took a more reductionist approach (p. 165). Chemical and animal experiments replaced Hamilton's factory inspections and Schereschewsky's test clinics (pp. 144, 163, 169). Edsall and his fellow scientists at Harvard aspired to achieve the "reduction of workplace effects to specific causes" (p. 166).

Despite the significant advances made in scientific knowledge of industrial hygiene, the relationship which Harvard and similar institutions established with corporate America frustrated the social goals of pioneers such as Hamilton (pp. 176-77). While Harvard emphasized to corporate donors that the funding was a "gift," rather than an investment (pp. 172-73), the very fact that Harvard received funding from large companies compromised its freedom to choose the subjects of research or to publish its results.

During the Great Depression, high unemployment rates and reduced profits caused most companies to revert to the old methods of worker turnover and employee screening (pp. 188-89). However, due to the wealth of knowledge developed about occupational hazards and workers' increased access to the legal system, corporate owners were faced with an unfamiliar enemy. Disgruntled worker-patients, with the support of personal injury attorneys and private physicians, launched lawsuits and compensation claims against large manufacturers throughout the United States (pp. 189-90). Under such attack, corporations formed an even closer bond with the profession of industrial hygiene. Sellers cites the example of physiologist/physician Robert Kehoe of the University of Cincinnati, who was hired by General Motors to conduct clinical and environmental analyses of its potential workplace hazards (pp. 192-93). A handful of firms, such as DuPont, established their own laboratories, in part to reduce costs from workers' compensation and liability claims (pp. 193-94). Many researchers, such as Kehoe and those at Harvard, testified in courts and government hearings on behalf of corporations, claiming that the medical knowledge and techniques of diagnosis employed by private practitioners were often suspect and unreliable (p. 206). Through the publication of new research about safe worker exposure levels and the formation of new professional organizations of trained industrial hygienists, these researchers tried to discredit clinical results by pro-plaintiff physicians, whom they viewed as an unruly threat to their profession (pp. 206-08). In the end, industrial hygiene became a tool for corporate policies, and fell far short of bringing about major changes in corporate behavior or creating amicable labor-management relations that earlier proponents like Hamilton had envisioned (pp. 231, 234).

The legacy of corporate influence on industrial hygiene continued when Congress chose to address the concerns about health threats to consumers that arose in the late 1930s by turning to the Public Health Service, the principal researchers of which included Kehoe and Aub (pp. 209-12). Along with the Food and Drug Administration, the Public Health Service studied the danger of pesticides on consumers of fruits (p. 209). Kehoe, in particular, conducted research in the United States and Mexico to establish a normal, as well as a natural, level of lead absorption (pp. 197, 217). Kehoe determined, and successfully convinced the government, that the modern levels of lead absorption were inevitable and innocuous for the most part (p. 225). The allegiances that Kehoe had formed with his corporate sponsors perhaps influenced him to become skeptical of the dangers of lead absorption. It is well known now that serious long-term consequences such as nerve damage and retardation can result from levels of lead exposure that Kehoe considered harmless (p. 225).

The author's main claim is that the *pax toxicologica* (p. 140) formed by the medical profession and corporate America not only allowed the companies involved to escape major reform, but also resulted in a skewed and flawed understanding of the science of industrial hazards for decades. Sellers urges his audience to remember the works of reform-minded pioneers like Hamilton and "the people whose sufferings they revealed and whose voices they represented" (p. 240). In the final paragraphs, he passionately argues that our democratic ideals cannot be compromised by a bargain struck between ambitious professionals and corporate officials, and that we cannot allow less organized and less powerful groups to be marginalized (p. 240).

Sellers crafts a unique narrative by emphasizing the careers of individual professionals, rather than by focusing on actions by the government or the accomplishments of labor and other special interest groups. He is therefore able to bring subjective factors, such as the background and the political disposition of an individual, to the forefront of his analysis. By relating the paths of these individuals to economic, social, and legal pressures, Sellers successfully takes his audience through a thorough and informative account of the history of industrial health science. In addition, the description of many incidents and episodes makes *Hazards of the Job* a lively and vivid historical narrative.

The main strength of the book is that it is filled with informative, relevant, and interesting facts on almost every page. Each assertion that Sellers makes is supported by statistics, tables, graphs, and photographs. However, the overwhelming volume of facts and figures tends to obscure Sellers's thesis that the study of industrial hygiene fell under the influence of corporate interests and eventually failed to reach its goals.

In fact, the reader must read to the last few pages of the Conclusion to truly appreciate the author's main argument. Nonetheless, *Hazards of the Job: From Industrial Disease to Environmental Health Science* provides a powerful insight into the work of industrial health scientists and reformers, and the external factors which shaped their work.

Tae Kim