THE CONSTRUCTION OF OCCUPATIONAL DISEASES:
PHYSICIANS AND LABOR UNIONS IN THE CHILEAN COPPER
INDUSTRY, 1930s-1960s

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In May 1935, Rosario Salgado, “male, miner, widower, sixty-two years old,” died in the San José Hospital in Santiago, Chile. According to the final medical report, he died of tuberculosis, chronic bronchitis, and probably silicosis. The presence of silicosis was confirmed at the Medical School at the University of Chile, where a group of physicians, studying the different kinds of lung diseases affecting mine workers, carefully analyzed his lungs and examined his records. When reviewing Salgado’s medical history, they did not find hereditary diseases but concluded that his “work experience is very interesting.” Salgado started working in a small copper mine next to Santiago (Caleu) when he was only eleven years old. He worked in Caleu for five years and continued working in copper mining over the next ten years, first in Las Condes and then in Maipo. Before moving to Chuquicamata (a large-scale copper mine owned by the Anaconda Copper Company), he worked three years in an iron mine (San Ramón). He stayed in Chuquicamata for twelve years and went back to Las Condes for six years. He then moved to another copper mine, Nalñahue, where he “noticed that his health did not allow him to continue working in the mines.”

Salgado had been sick on several occasions. When he was twenty years old, he had lung infection, probably bronchial-pneumonia, for three months. He was hospitalized at the beginning of the century for lung disease and had gonorrhea once. He began to notice the symptoms of silicosis when he was in his early fifties. His medical record states: “His present illness dates from ten years ago, when he had a street accident; a trolley knocked him down. He was hospitalized in The El Salvador [public hospital in Santiago] for a while and, after that, he returned to his normal activity. Early in 1935, while he was in the mine, he felt strong shivers, bone and muscle pain all over his body. A few days after, he began coughing.” In March 1935, Salgado was hospitalized again. He had lost weight, had problems breathing, and suffered from abdominal pain. In May, he died.

The story of Rosario Salgado was far from unique. Like him, many Chilean male workers spent their lives, and their lungs, working in the mines, ending their days in a public hospital or sanatorium. Yet, physicians’ concern for Salgado’s story and their attention to the relationship between disease, and specifically silicosis, and working experience was new. The ways in which the medical community approached and debated the problem of silicosis shed light into the emergence of the concept of occupational disease in Chile. The development of the idea of silicosis as a serious occupational disease shared some similarities with the medical interest in the so-called social diseases. Especially relevant was the conviction that the state was responsible for the health of the nation citizens, and that silicosis, like syphilis or tuberculosis, had critical consequences

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2 Idem

3 For an overview of the life and work of Chilean transient workers see Gabriel Salazar, Labradores, peones y proletarios. Formación y crisis de la sociedad popular chilena del siglo XIX (Santiago, Chile: 1985).
for the prosperity of the country. However, physicians, at least in the 1930s, did not blame working people for their illness but clearly identified environmental causes and employers’ negligence as responsible for the high frequency of silicosis among mine workers. In addition, unionized workers played a prominent role in devising and suggesting ways to confront silicosis.

This paper examines the construction of silicosis as an occupational disease in Chile throughout the 1930s and 1940s. This process was shaped by ideas of social medicine and industrial hygiene, the expansion of the social functions of the state, the growth of the copper industry, and the successful process of unionization in the copper mines. The social and labor legislation enacted in the 1920s regulated occupational diseases and accidents. During this period, workers who suffered from silicosis were entitled to economic benefits, but the limitations of these laws inspired a political movement for what was called an effective and integral protection. In the late 1930s, large-scale copper mines enforced prevention programs in their mines, but for the most part workers contested the scope and approach of the company’s measures. In the following decades, local unions strove to increase economic coverage, enforce effective prevention programs, and define the uniqueness of mine work. This paper analyzes the different solutions to the problem of silicosis offered by health reformers, employers, and local unions, and the ways in which they interacted and conflicted. The paper is divided in two parts. First, it examines the medical debate of the 1930s and 1940s and its influence on the state. Second, it looks at how these ideas played out in the case of the Andes Copper mine of Potrerillos. Potrerillos is a useful window into the problem of silicosis because of the high frequency of the disease, the militancy of the local unions, and the company’s strategy to enforce some prevention programs.

From an obscure disease to a national problem: The 1930s

Popularly known as miner’s consumption, silicosis is a chronic, incurable, and often-fatal lung disease caused by the prolonged inhalation of particles of silica dust. High concentration of silica dust is usually found in hard rock mining, stone works, foundries, tunnel construction, and sandblasting, glass and abrasive industries. Silicosis causes permanent disability and, eventually, death. The development of the disease can take between one to ten years, depending on the environment, the time of exposure, and the individual’s physical characteristics. As the disease develops, and the nodules on the lungs grow from 1.25 mm in the first stage to 7 mm in the last stage, disability increases. Workers who suffer from silicosis experience shortness of breath, severe cough, fatigue, loss of appetite, chest pain, and/or fever, and they usually die of complications from lung

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4 For a discussion about the ways in which physicians approached prostitution and sexually transmitted diseases in Argentina see Donna J. Guy, *Sex and Danger in Buenos Aires: Prostitution, Family, and Nation in Argentina* (Lincoln: 1995).

5 In 1916, the Andes Copper Company, a subsidiary of the Anaconda Copper Company, purchased the mine of Potrerillos, located in the Chilean northern province of Chañaral. In 1959 the mine of Potrerillos was closed and replaced by the El Salvador mine (also called Indio Muerto) located about twenty-eight and a half miles northwest of Potrerillos.
infections (e.g., pneumonia, bronchial-pneumonia, and tuberculosis), lung cancer, or heart disease.6

During the first four decades of the twentieth century, silicosis came to be considered a serious problem in many mining and industrial countries such as Bolivia, Chile, England and Wales, South Africa, and the United States. A growing concern about miners’ health inspired medical congresses, health campaigns, legal reforms, and mandatory systems of prevention.7 In Chile, a mining country, the interest in silicosis grew in the 1930s when a series of empirical studies demonstrated the frequency of the disease among Chilean workers. In the early 1930s, Chilean physicians interested in lung diseases conducted research in glass plants in Santiago (1933), addressed the problem of silicosis in the annual meetings of the Sociedad de Tisiología, and collected empirical evidence by examining and X-raying lungs in public hospitals.8 In 1935, a group of Chilean physicians attended the Congress of Tuberculosis in Montevideo, Uruguay, in which they explained to their Latin American colleagues the high frequency of the disease in Chile.9 That same year, Rafael Hevia from El Salvador Hospital in Santiago recognized that for years Chilean physicians had ignored the importance of silicosis (which had been mistaken by tuberculosis or just ignored) but when they had started a systematic, scientific, and radiological study of the disease, the cases multiplied.10

In part, this medical awareness was propelled by advances in medicine and technology. During the first decades of the twentieth century, the international medical community had defined the unique characteristics of silicosis, differentiated silicosis from tuberculosis, and concluded that although individuals’ physical characteristics were relevant factors in its development, working conditions were its principal cause.11 Two international congresses, the IV Meeting on Occupational Disease of the International Labor Organization (Lyon, France 1929) and the Silicosis International Conference (Johannesburg, South Africa 1930), had been crucial in making known the latest medical


advances. Additionally the development of the X-Ray in the 1920s had made possible to examine lungs and diagnose the disease.

While scientific advancements facilitated the diagnosis of silicosis, the influence of ideas of social medicine and industrial hygiene and the consequently expansion of the public health system under the Popular Front (1938-1952) transformed silicosis into a “national problem.” The concern for social and health conditions of working people dated from the late nineteenth century, when, as part of debate over the la cuestión social (the social question), members of the elite and new progressive middle-class sectors expressed dismay at the social consequences of the process of urbanization, modernization, and industrialization. In the following decades, physicians rallied around the idea that environmental conditions had a profound effect on working people’s health, denounced dangerous and unhygienic working conditions in Chilean mines and industries, and asked the state to devise strategies that would effectively protect workers’ health. The social laws enforced in the 1920s and the Labor Code of 1931 gave the state the responsibility to guarantee healthy working conditions and provided workers with some sort of economic compensation in case of disease. However, most of the social legislation was little enforced until the 1930s. The Popular Front (1938-1952) legitimated the concept of public health, incorporated social reformers and physicians such as Salvador Allende in the government, and built a public health system that emphasized the state’s responsibility in providing health care and protecting and promoting healthy living and working conditions for all Chilean citizens. The Popular Front commitment to labor organization also increased official visits and enforcement of the existing labor laws.

Ultimately, the state took a stronger interest in the problem of silicosis, in contrast to other occupational diseases, because of the growing economic importance of the copper industry and the pressures of workers in a key sector of the economy. In the late 1930s, following the collapse of the nitrate industry, the copper industry became the leading export sector in Chile, producing most of the country foreign income and a considerable percentage of state revenues and gross domestic product. In addition, under the protection of the Labor Code (1931), copper workers unionized and demanded the

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12 Alejandro Reyes (1936).


14 Salvador Allende, La realidad médico social chilena (Santiago, Chile, 1939).

15 María Angélica Illanes, La batalla de la memoria (Santiago, Chile, 2002).

16 A similar situation has been described by David Rosner and Gerald Markowitz in their study of silicosis in the United States. According to the authors, silicosis only became a crucial issue in the United States when it started having political and economic implications and when workers brought “cases of disease to the courts in the form of liability suits.” David Rosner and Gerald Markowitz (1991), 66.

17 Patricio Meller, Un siglo de economía política chilena (1890-1990) (Santiago, Chile, 1996).
enforcement of their labor and social rights, which included the right to work in a safe environment.\(^1^8\)

Throughout the 1930s and 1940s, in the context of the growing importance of the copper industry, health reformers articulated a discourse in which silicosis was presented as a threat to national progress and prosperity. In 1936, doctors H. Orrego Puelma and E. Calderón Paul referred to silicosis as a “national problem.”\(^1^9\) In 1937, Doctor Raúl Gutiérrez claimed that silicosis was the most critical occupational disease in the country and a serious threat to the lives of mine workers and to Chile’s prosperity.\(^2^0\) Two years later, doctor René García made a similar assertion. García was especially concerned about how silicosis affected workers in the key sectors of the economy. He explained: “From a medical and social point of view, silicosis is the most important occupational disease, because it is a common and frequent danger to workers’ health and to their capacity to work in those numerous industries that contribute to our national richness, especially the copper, coal, and gold mining industry.”\(^2^1\) Similarly, medical officers argued that Chilean workers would threat the social security system. In 1935, Rafael Hevia described the costs of silicosis: “From the medical and social point of view, its importance is enormous when taking into account the great number of blue-collar workers who have stopped working” and they became “a heavy weight for the institutions of welfare and social security.”\(^2^2\)

**Workers, Employers, and Silicosis: The case of Potrerillos**

In Potrerillos, silicosis was “the central subject of all workers’ demands, the company’s attention, and official studies;”\(^2^3\) Potrerillos was hard-rock mining, and its ore had a high content of silica in the ore (71.8 percent). The system of ore extraction (underground mine) and the several phases of crushing that the ore needed, especially the sulfide ore, exposed workers to silica particles in a permanent basis. In the 1940s, physicians who visited Potrerillos portrayed it as a “dangerous” place. In November 1940, a medical commission of the Office of Social Security (Caja de Seguro Obligatorio) diagnosed 211 cases of silicosis in Potrerillos. Most cases (148) were only in the first phase.\(^2^4\) In 1941, Manuel De Viado, who conducted a social and medical study of the

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18 For a general history of the process of unionization in the copper mines see: Jorge Barría, _Los sindicatos de la gran minería del cobre_ (Santiago, Chile, 1970).


22 Rafael Hevia Acuña (1935).


24 Caja de Seguro Obligatorio, 27 May 1941, Santiago, Ministerio de Salubridad, providencias. 1941, 1140-1539, Archivo Nacional de la Administración.
Potrerillos labor force, reached similar conclusions. From the 1,270 that De Viado studied, 1,018 (88 percent) were considered normal and 252 (12 percent) sick. The 252 cases of silicosis were divided in first degree (170 cases or 67.4 percent), second degree (34 cases or 13.6 percent), third degree (35 or 5.2 percent), and tuberculosis without silicosis (13 cases or 5.2 percent). In 1945, Bernardo Mellibowsky reached similar conclusions. He argued that despite the company’s efforts at prevention, silicosis was so frequent in Potrerillos that most blue-collar workers were infected.

Starting in 1937, Andes Copper developed basic systems of prevention in its mines and enforced medical examination of new workers. In doing so, it was responding to pressures from workers’ organizations and medical inspectors and a legislation that, although incomplete, sanctioned employers for accidents and occupational diseases. Behind employers’ interest in looking after workers’ health lays the need to maintain levels of efficiency and productivity and decrease labor turnover. Thus, Andes Copper began to provide safety gear and protective equipment for its workers (masks), measure the air quality in the plants and the mine, water the dustiest places in the plants, and build systems of ventilation in the mine. In the late 1930s, Andes Copper sent doctor Jorge Campino first to Anaconda’s mine in Cananea, Mexico and, then, to a medical school in the United States to study the problem of silicosis and the programs of prevention. Campino became a national expert in the control of silicosis. Back in the hospital of Potrerillos, he organized periodic medical examinations for workers exposed to the disease.

Prevention programs fell short, and silicosis continued threatening workers’ lives in Potrerillos. As a result, beginning in the late 1930s, the rights to be healthy and have access to health care became critical and politicized demands for Chilean copper workers. Unions strove for protection, free health care, monetary compensation, and inspection and reform of the work place. They believed that both the state and employers shared responsibility in guaranteeing a safe workplace. Copper workers’ health struggle and their common experience of a risky and unhealthy working environment empowered their growing union movement and reinforced solidarity.

Ideas of masculinity and sacrifice and the belief that mine work was harder than other occupations reinforced unions’ demands for special legislation. Workers pointed out

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25 Manuel De Viado (1941)


that the disease caused disability and economic starvation, threatening their role as family breadwinners as well as their physical strength. In 1947, *La Usina*, a working-class newspaper published in Potrerillos, denounced that the hiring policy of Andes Copper and the social and national consequences of silicosis was “rapidly destroying our youth” and even the country’s military because “by the time our young people go to fulfill their military duties, they have contracted occupational diseases.”

Beginning in 1939, labor newspapers and union meetings addressed and publicized the question of silicosis, pointed out the limitations of the company’s programs and the low frequency of medical examinations, and demanded the visit of health and labor inspectors to the mine. In March 1939, a socialist newspaper from Chañaral, *Avance*, denounced the high rates of silicosis in the Potrerillos mine and the unfair labor practices of the company, and it asked the Popular Front government for a rapid solution. In June 1939, Potrerillos labor unions called public attention to the problem of silicosis during a mining congress in Copiapó and during the Second Congress of the National Confederation of Copper Workers (CTC). That same year, they sent letters to the *Caja de Seguro Obrero* and the Ministry of Health and presented a project to reform the retirement law. As a result of these demands, in the following years, several physicians and public authorities visited the mine. For instance, Alfredo Rojas Carvajal, from the office of preventive medicine, traveled to Potrerillos in 1939, an unofficial commission led by José Ansola visited the mine several times between December 1939 and June 1941, and a commission led by Manuel de Viado, from the Ministry of Public Health inspected the mine in July 1941.

In 1941, the Social Security Office (*Caja de Seguro Obrero*) also sent a medical commission to Potrerillos. From the 1940s to the nationalization of the copper mines in 1971, workers in Potrerillos pursued three collective strategies to ensure a safe working environment, a healthy working-life, and a decent retirement: (1) lobby the National Congress, political parties, and the government to reform the national legislation and guarantee protection and compensation; (2) include clauses in their collective contracts that would force the company to improve the workplace and maintain health-care services, and (3) mobilize to enforce health rights. To do so they draw on the Labor Code and social legislation and their relationship with the Left and the Radical Party. Over time, however, they sought to expand this legal framework and include and legitimate new rights. Ultimately, they relied

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32 Manuel de Viado (1942).
33 Sindicato Industrial Obrero La Mina y Las Vegas, “Moción y exposición de motivos pro-ley de jubilación de los mineros,” Potrerillos 25 June 1939. Biblioteca Nacional, Santiago, Chile.
34 Manuel de Viado (1941).
on the power and legitimacy of their union movement and the capacity to mobilize workers to defend and expand their rights.

The legal struggle for workers’ health rights combined the efforts of labor unions, legislators representing mining districts, and progressive public officers. They aimed to guarantee economic compensation for sick workers, enforce systems of prevention in the workplace, and grant workers an early retirement based on the fact that workers suffered from the strains of mine work. Until the 1960s, however, they had little success, and most proposals that created “special” rights for copper workers were heavily criticized.

The legal battles targeted the existing laws, Laws 4055 and 6174, which they characterized as incomplete, vague, and ineffective. In 1939, the unions asked the National Congress to revise the law and grant copper workers retirement benefits after 20 years of work and to increase the economic compensation in case of accidents and illness. In 1940, Salvador Allende, Minister of Public Health, failed to pass a law to regulate the problem of silicosis that would have enforced strict measures of prevention, medical control, a national classification to identify the several phases of the disease, and a more efficient system to file a claim and obtain compensation.

In 1952, copper workers were benefited by the reform of the public health and social security system (Law 10383). Among other things, the 1952 law granted workers who suffered from chronic silicosis and were unable to work a life pension. It insured male workers the right to receive their retirement fund once they had turned 65 years old and were enrolled in the social security system for a minimum of 800 weeks. In addition, the law reduced the retirement age one year for every five years worked in “heavy-duty jobs,” for a maximum reduction of five years.

In the 1960s, the union legal battles focused on reforming the conditions of employment and reducing the time that workers spent in risky or unhealthy environments.

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36 Law 4055, enacted in 1925, protected blue-collar workers in case of accidents and occupational diseases and established the concept of monetary compensation and employers’ responsibility. However, the mechanisms to report the disease, prove employers’ responsibility, and obtain compensation were extremely complicated, slow and impractical in the case of silicosis, leaving many workers unprotected. Law 4055, 26 September 1924. Also see: “Reglamento sobre indemnizaciones por accidentes del trabajo” (Decree 238, 31 March 1925) and “Reglamento sobre enfermedades profesionales,” (Decree 581, 21 April 1927). In: Repertorio de legislación y jurisprudencia chilenas (Santiago, Chile: Editorial Jurídica de Chile, 1958), volume 3, 1-44

37 In 1938, Law 6174 established mandatory medical exams for workers who belonged to the social security system. It especially focused on the need to prevent the development of chronic diseases such as “tuberculosis, syphilis, rheumatism, heart and kidney diseases” and occupational diseases like silicosis. Law 6174, 9 February 1938. Repertorio de legislación y jurisprudencia chilenas (Santiago, Chile: Editorial Jurídica de Chile, 1958), volume 4, 126-134

38 Sindicato Industrial Obrero La Mina y Las Vegas (1939).


In 1962, a group of leftist legislators representing mining districts (Juan Argandoña, Víctor Galleguillos, Manuel Magalhaes Hugo Robles, Ramón Silva Ulloa, and Ricardo Valenzuela) proposed a six-hour workday for workers exposed to particles of silica dust, periodic inspection of mines and plants, and strict sanctions for employers who violated the safety norms. Although the 1962 project did not prosper, in 1963, the National Congress approved a legal reform to social security that benefited workers who suffered from silicosis. The project, presented by the Communist Party and supported by the Frente de Acción Popular (FRAP, a political coalition of the Communist and Socialist Parties in the 1950s and 1960s), guaranteed monetary compensation for all sick workers regardless of where and when they had contracted the disease.

More successful than the demands for legal reforms was the use of collective bargaining to improve working and living conditions. During the collective bargaining of 1945, Moisés Poblete from the Ministry of Labor made an influential remark about silicosis in Potrerillos, legitimating workers’ demands: “Working conditions in the mine of Potrerillos are exceptionally hard as is shown by a simple observation of the shop floor and the high rate of death among workers caused by silicosis and work accidents.” Throughout the 1960s, local unions asked for special bonuses to benefit workers who suffered accidents, were diagnosed with silicosis, or worked in dangerous environments. Similarly, they asked the company to improve the ventilation system in the mine and plants. For the most part they succeeded (although the bonuses were never as high as the unions wanted). A less successful battle, which had also failed at the National Congress, was the attempt to reduce the workday (from 8 to 6 hour) for workers employed underground and in plants with high content of toxic emanations.

Changes in the legislation and union contracts did not guarantee workers’ rights. Thus, throughout the 1950s and 1960s, union militancy was crucial to defend workers prerogatives. Unions demanded the full enforcement of the Labor Code, the social legislation regarding occupational diseases, and their union contracts. They made sure that workers received their monetary compensation, calling the attention of labor officers, and filed grievances before the local labor courts. In the early 1960s, the unions complained about the lack of both proper ventilation systems and periodic medical examinations. According to labor union leaders, company physicians were reluctant to diagnose the first phases of silicosis and, as a consequence, many miners worked under high-risk conditions until the disease progressed into its dangerous third stage. Again, in 1968, local unions demanded that the state verify the levels of air pollution within the plants and the mines. Doctor Humberto García, from the Corporación del Cobre, visited Potrerillos in December 1968. He agreed with the labor union leaders’ assessment of the unhealthy conditions in the mine and the crushing plants. He visited the smelter and refinery, where he found that the emissions from the plants were also very toxic. Back in Santiago, García

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41 El Siglo, 20 May 1962.
43 Manuel Magalhaes, Cámara de Diputados, Diario de Sesiones, 12 September 1950.
44 “La temible silicosis,” El Siglo, 14 February 1964.
wrote a report and asked the government to “demand that Andes Copper follow the recommendations about ventilation and industrial security.”

The electoral victory of the Popular Unity in 1970 and the nationalization of copper in 1971 revolutionized the social and labor treatment of silicosis. In Potrerillos, the state-owned company COBRESAL organized a massive campaign against silicosis. Its goals were “to research and evaluate the damage among 100% of the workers exposed to risk in COBRESAL;” “to follow and evaluate the cases that have been diagnosed; “to propose reallocation and rehabilitation for sick workers,” and “to establish a periodic rotation of healthy workers exposed to risk.” In 1972, a “Commission of Rehabilitation” focused on creating alternatives within the same company for disabled workers and introduced job rotation to reduce the number of hours or days of exposure to silica. The commission also organized workshops to prepare mine workers to work in other areas and discussed the possibility to purchase agricultural land in the valley of Copiapó to build a rehabilitation center for sick workers. As the military coup of 1973 put an abrupt and violent end to these programs, their goals were never achieved and they remained a revolutionary experiment.

Conclusions

Silicosis was the most famous and widespread occupational disease affecting workers in the copper industry. Over time, workers, legislators, and health workers established effective systems of prevention and a protective legislation. Although silicosis did not disappear, workers were entitled to compensation and protection. Trade unions were especially successful in calling national attention, and their complaints were usually followed by rigorous inspections. Through collective bargaining, local unions were able to increase economic compensation by introducing special bonuses. Despite unions’ achievements and the improvement in working conditions in large-scale mines, workers were unable to introduce more revolutionary demands such as a reduced workday or job rotation and silicosis continued to be a threat to workers’ lives. The role played by unions was critical. While health reformers provided the scientific arguments to regulate silicosis, unionized workers guaranteed the enforcement prevention measures and compensation rights at the local level. Without a powerful union movement in the large-scale copper industry, most of the laws and regulation would have been easily ignored as happened in the small mines.


46 “Primer encuentro de producción y participación de los trabajadores de Cobresal,” 1973, El Salvador, Chile, Museo División El Salvador.
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