

Editorial

History of work-related diseases as a tool to protect the health of workers

Historical events and trends, despite being a cornerstone of public health generally, are often relegated to little more than a footnote in the biomedical literature. This is all the more so the case for occupational and environmental health, despite a long-held recognition that working conditions impact wellbeing, from classical Greek and Roman texts onward¹⁾. Indeed, attention to history not only has played a pivotal role in our understanding of how workplace exposures have affected the lives of workers and their families in the past, but also can better prepare us to intervene in current and anticipated future, emerging exposures.

Recognition of workers' health in the classical period was fragmentary and fleeting in medieval sources; texts that considered this subject more expansively finally began to appear in the 16th century. In *De Re Metallica*, first published in 1556, Agricola describes the mine-dust related diseases of the miners, "... the dust which is stirred and beaten up by digging penetrates into the windpipe and lungs, and produces difficulty in breathing, and the disease which the Greeks call asthma"²⁾. At nearly the same time, in 1555, a Swedish archbishop, Olaus Magnus, published his "History of the Nordic People." In it, he states that harvesting farmers have to be careful of the dust, otherwise their lungs will be damaged and they will never eat what they have harvested³⁾. A woodcut image from his book has been featured in Swedish currency (Fig. 1). At the beginning of the 18th century, Bernardino Ramazzini published (1700) and then later expanded (1713) his definitive text on occupational medicine, *De Morbis Artificum Diatriba*, which earned him the accolade of "Father of Occupational Medicine"^{4, 5)}.

The value of these seminal works is not just in their stories themselves, but also in recognizing the tools that they provide the discipline of occupational and environmental health. Passed down to us over centuries, they paved the way for a better understanding of how the nature of work itself, through the exposures generated, impacts the health of those employed, their families, and surrounding communities. In recording such observations these historical figures before us, and we today, can challenge conventional

assumptions that all and any work-related ill-health is dependent solely on individual factors and personal risk. The inattentive worker suffers the accident; the smoking worker fall victim to disease. The observation that workers who may be experiencing adverse outcomes across a range of settings, linked by similar exposures, provides the impetus for collective interventions and allows us to build a generic framework to make work healthy.

To a far greater degree than other fields of medicine, occupational and environmental health, is shaped by its technological contexts⁶⁾. Changes over time in technology alter the risk that workers face: improved ventilation, engineering controls, or substitution to remove hazards provide the opportunity to reduce or eliminate risks, while the extraction or manufacture of new materials or the introduction of novel, hazardous technologies can increase risk⁷⁾. For example, introduction of chlorine compounds in the bleaching process in the late 18th and early 19th century caused the immediate recognition of its associated adverse respiratory effects⁸⁾. Steam powered machinery greatly increased silica dust generation linked to pneumoconiosis throughout the 19th century and much of the 20th⁹⁾. Newly commercialized chemical innovations such as carbon disulfide in the 19th century rubber industry and viscose rayon in the 20th produced entirely new occupational neurologic diseases, from work-related psychosis to toxicant-cause parkinsonism¹⁰⁾. Asbestos, a natural product, newly and widely introduced into commerce in the 20th century, has left us a 21st century legacy of mesothelioma^{11, 12)}. Despite the documented history and our increasing knowledge, epidemics of occupational lung disease persist¹³⁾. The changing world of work drives ever-evolving worker risks, from slavery to forced labor to braceros and the kafala system for foreign workers, from feudal peasants to factory workers, from piecework to the "gig" economy. This evolution of work contributes to exposures in the broader environment, impacting on the health of the families of workers¹⁴⁾.

Furthermore, no biomedical field is as politically contested as occupational and environmental health. Because risk is modified through social processes that preferentially

benefit certain sectors of society while the burden is borne by other sectors of society, this imbalance can only be redressed and optimal health achieved through social movements engaged in the political, legal, or public activist arenas^{7, 15, 16}. Documenting and analyzing these social processes is as important to the history of occupational and environmental health as the time course of changing exposures and resulting injury and illness. Policies and services to protect the health of workers do not emerge by chance alone in different times and places nor do they subsequently weaken or disappear altogether, as illustrated in the case of the National Institute of Working Life in Sweden¹⁷.

To ensure that there continues to be a systematic approach to documenting the history of occupational and environmental diseases, the International Commission on Occupational Health formed the Scientific Committee on the History of Prevention of Occupational and Environmental Diseases. The latter has been responsible for the organizing of periodic international conferences^{7, 15, 16} as well as training programmes for researchers. In response to the COVID-19 pandemic, the Scientific Committee continued its activities through online platforms. The recent webinar with the intentionally ironic title, "Reconsidering the Politics of Occupational Health in a World without Industrial Work," focusing on the theme of labour, health and the South African mining industry, past, present and future²⁰. The Scientific Committee plans to host its next webinar in February 2022, provisionally planned to be hosted at Science Po, Paris and the seventh full and an "in-person" international conference tentatively to be held in Durban, South Africa in May 2024.

References

- 1) Sigerist HE (1936) The Wesley M. Carpenter Lecture: "Historical Background of Industrial and Occupational Diseases". *Bull N Y Acad Med* **12**, 597–609.
- 2) Agricola G (1556). *De Re Metallica*. Hoover, HC and Hoover LH, transl (1912). *The Mining Magazine*, London. <https://www.gutenberg.org/files/38015/38015-h/38015-h.htm>. Accessed May 28, 2021
- 3) Magnus O (1555). *Historia om de Nordiska folken*. Roma MDLV (Reprint Gidlunds Förlag, Stockholm, 1982).
- 4) Franco G (2020) Revisiting the past strengthens the present: Bernardino Ramazzini and the new occupational health. *Public Health* **181**, 180–1.
- 5) Carnevale F, Mendini M, Moirani G (2009) Bernardino Ramazzini works. The diseases of workers; the health of princes. Verona: Cierra Edizioni.
- 6) Blanc PD (2012) Historical perspective of occupational and environmental lung disease. In: *A Clinical Guide to Occupational and Environmental Lung Diseases*, Huang Y-C T, Ghio AJ, Maier LA (Eds), 1–26, Humana Press (Springer), New York.
- 7) Blanc PD, Brian Dolan B (eds). *At Work in the World. Proceedings of the Fourth International Conference on the History of Occupational and Environmental Health*. University of California Medical Humanities Press. 2012
- 8) Torén K, Blanc P (1997) The history of pulp and paper bleaching: respiratory health effects. *Lancet* **349**, 1316–8.
- 9) Rosental P-A (Ed) (2017) *Silicosis: A World History*, 279, Johns Hopkins University Press, Baltimore.
- 10) Blanc PD (2016) *Fake Silk. The Lethal History of Viscose Rayon*, 1st Ed., Yale University Press, New Haven.
- 11) McDonald JC, McDonald AD (1996) The epidemiology of mesothelioma in historical context. *Eur Respir J* **9**, 1932–42
- 12) Brodeur P (1974) *Expendable Americans: The incredible story of how tens of thousands of American men and women die each year of preventable industrial disease*, 274, Penguin Publishing Group, New York
- 13) Kramer MR, Blanc PD, Fireman E, Amital A, Guber A, Rhahman NA, Shitrit D (2012) Artificial stone silicosis: Disease resurgence among artificial stone workers. *Chest* **142**, 419–24.
- 14) Blanc PD, Nadel JA (1994) Clearing the air: the links between occupational and environmental air pollution control. *Public Health Rev* **22**, 251–70.
- 15) Gomez CM, Vasconcellos LCF, Machado JMH (2018) A brief history of worker's health in Brazil's Unified Health System: progress and challenges. *Cien Saude Colet* **23**, 1963–70.
- 16) Fellone L, Battista G (2019) Brief history of occupational health in Italy. *Arch Environ Occup Health* **74**, 42–9.
- 17) Westerholm P (2007). Closing the Swedish National Institute for Working Life. *Occup Environ Med* **64**, 787–8
- 18) Grieco A, Iavicoli S, Berlinguer G (Eds) (1999) *Contributions to the history of occupational and environmental prevention: 1st International Conference on the History of Occupational and Environmental Prevention*, Rome, Italy; 4-6 October 1998. Elsevier, Amsterdam, 211–21.
- 19) Nelson MD (Ed) (2006) *Occupation health and public health. Lessons from the past- challenges for the future*. 2nd International Conference on the History of Occupational and Environmental Prevention, *Arbete och Hälsa (Ventenskaplig Skriftserie)*, National Institute for Working Life, Sweden, 87–97.
- 20) Breckenridge K (2021) *Reconsidering the Politics of Occupational Health in a World without Industrial Work*. Keynote address to the International Commission on Occupational Health Scientific Committee on the History of Prevention of Occupational and Environmental Diseases webinar, Durban, South Africa. <https://www.youtube.com/watch?v=M4WNYDwE7TE&t=13s>. Accessed May 28, 2021



Fig. 1. An image from Magnus (1555) featured in Swedish currency

Rajen N. NAIDOO

Discipline of Occupational and Environmental Health, University of KwaZulu-Natal, South Africa

Paul D. BLANC

Department of Medicine, University of California San Francisco, USA

Kjell TORÉN

Occupational and Environmental Medicine, School of Public Health and Community Medicine, Sahlgrenska Academy, University of Gothenburg, Sweden