International Review of Social History (2025), pp. 1–28
doi:10.1017/S0020859025000057

RESEARCH ARTICLE

Classifying Occupational Hazards: Narratives of Danger, Precariousness, and Safety in Indian Mines, 1895–1970*

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Abstract

This article suggests that classification exercises were the quintessential modality for both the narrative and labour–management relations of occupational health and safety in Indian mines for the period 1895–1970. The extant literature has underestimated the cause-and-effect relationship that such classification practices had, including punitive safety regulation clauses, compensation clauses, the public image of firms, forms of knowledge, and stakeholder bargaining. The narrative of work hazards fundamentally forged casualty classification patterns. The ascertainment techniques applied to casualty, perceptions of occupational risk, and the politics of restitution shaped the narratives and defined patterns of casualty classification. Management devised various ways to present a decent picture of mining through casualty statistics. Later, critiques of this business practice exposed statistical discrepancies and flaws in the classification system, challenging the built-in business-blindness. From the late 1920s, the informed, organized mineworkers articulated their experiences of workplace risk; they confronted the managerial discourse of "unavoidable" work hazards and mineworkers' liability for casualty. The mineworkers' publicists and the government of the Republic of India took an interest in research on occupational health and safety and its regulation. They aimed at industrial efficiency and national reconstruction by creating a healthy, contented, and experienced workforce. All this steered the classification exercises of industrialists and public authorities towards favourable changes. The twin forces of capital and working people converged on the restitution measures articulated within the utilitarian paradigm. The latter, ironically, contributed to valorizing the narrative of risk and sacrifice in the lives of mineworkers.

*I thank the two anonymous referees, the IRSH Editorial Committee, and Dr Deepti Mulgund for their comments and suggestions.

Introduction

In industrializing countries, a new social question emerged in the late nineteenth century regarding working people's welfare.[1] The debate on this question included occupational health and safety and its interconnection with welfare and efficiency in industrial and mining centres.[2] These concerns led to the gradual adoption of protective and compensatory measures for working people afflicted by occupational hazards, beginning in Germany, the US, and Britain in the 1880s.[3] State legislation for safety regulations and working people's compensation resulted from a combination of factors, including: concerns about industrial disasters; new scientific knowledge and increased visibility of occupational risk; the growing understanding and acceptance of medical knowledge related to workers' health; the activism of organized labour to publicize such an understanding; and the recognition of the ruling establishment's political responsibility for protecting the working population.[4]

Some commentators additionally suggest that, in Britain, the government realized that the country needed a healthy working population in order to successfully compete with other industrializing countries (Germany, the US, and France) from the turn of the twentieth century. Consequently, it intervened in issues of safety and health with the compensation law of 1897 and its subsequent expansion through amendments.[5] A similar concern, arising in the aftermath of World War II, shaped the better enforcement of these laws in Britain and elsewhere.[6] The application and effectiveness of such occupational health measures had decidedly chequered histories and varied both within and among countries owing to an array of causes.[7]

[1]Jan Breman *et al.* (eds), *The Social Question in the Twenty-First Century: A Global View* (Oakland, CA, 2019).

[2]*Ibid.*; Paul-André Rosental (ed.), *Silicosis: A World History* (Baltimore, MD, 2017), pp. 1–13; Kovalenko Ruslan *et al.*, "Occupational Safety and Health of Factory Workers in European Countries in the Nineteenth-Century Historical and Legal Analysis", *Labor History*, 61:3–4 (2020), pp. 388–400.

[3]*Ibid.*; Michael Farrenkopf, "Accidents and Mining: The Problem of the Risk of Explosion in Industrial Coal Mining in Global Perspective", in Stefan Berger and Kate Alexander (eds), *Making Sense of Mining History: Themes and Agenda* (Oxon, 2020), pp. 193–211.

[4]Farrenkopf, "Accidents and Mining"; Ruslan *et al.*, "Occupational Safety and Health"; A. Mclvor and R. Johnston, *Miners' Lungs: A History of Dust Disease in British Coal Mining* (Abingdon, 2007); Peter Bartrip, "Too Little too Late?" The Home Office and the Asbestos Industry Regulation 1931", *Medical History*, 42 (1998), pp. 421–438; R. Higgens-Evenson, "From Industrial Police to Workmen's Compensation: Public Policy and Industrial Accidents in New York, 1880–1910", *Labor History*, 39 (1998), pp. 365–380.

[5]Catherine Mills, *Regulating Health and Safety in the British Mining Industries*: *1800–1914* (London, 2010).

[6]Mclvor and Johnston, *Miners' Lung*; Sue Bowden and Geoffrey Tweedale, "Poisoned by the Fluff: Compensation and Litigation for Byssinosis in the Lancashire Cotton Industry", *Journal of Law and Society*, 29 (2002), pp. 560–579; Gill Burke, "Disease, Labour Migration and Technological Change: The Case of the Cornish Miners", in P. Weindling (ed.), *The Social History of Occupational Health* (London, 1985), pp. 78–87; Peter Bartrip, "The Rise and Decline of Workmen's Compensation", in Weindling (ed.), *The Social History of Occupational Health,* pp. 157–179.

[7]The difference between the experiences of workers in the asbestos, copper, coal, and cotton industries are discernible in the case of Britain itself: Mclvor and Johnston, *Miners' Lung*; Bowden and Tweedale, "Poisoned by the Fluff". See also Jock McCulloch, "Medicine, Politics and Disease on South Africa's Gold Mines", *Journal of Southern African Studies*, 39 (2013), pp. 543–556; *idem*, "Surviving Blue Asbestos: Mining and Occupational Disease in South Africa and Australia", *Transformation: Critical Perspectives on*

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One of these causes, which is the focus of the article, had to do with the praxis of the classification of occupational casualty in India's coalmines.

Classification exercises were the quintessential modality by which the narratives of occupational risk and labourmanagement relations regarding occupational health and safety were created. Classification was wedded to punitive safety regulation clauses, compensation clauses, the public image of firms, forms of knowledge, and stakeholder bargaining. As such, the article elaborates on the praxis of classifying work hazards, including the discursive creation of casualty categories, in the extractive industry in India from 1895 to 1970. This period witnessed the scaling-up of commercial mining in the Indian coalfield of Jharia – the largest source of fossil fuels in the Indian subcontinent – before its management was drastically altered by the nationalization of the coalmines in 1971/1973.[8]

The article shows that the narrative of work hazards and safety necessarily forged the casualty classification patterns. The ascertainment techniques applied to casualty, perceptions of workplace risk, and the politics of restitution together constituted classification exercises. Colliery management devised various ways to portray mining in a positive light despite the dismal statistics on hazards and human loss, such as underreporting, disappearance of victims, "other fatal accidents" of a non-mining nature, the category of "natural deaths", and fatality in the course of but not as a result of employment. Employers' blinkered vision regarding the health and safety conditions of working people was soon challenged by critics and the plebeian public, who confronted the employers' business-blindness by exposing the discrepancies in the statistics and the system of classification.[9]

From the 1920s, increasingly informed and organized mineworkers gradually interrogated the twin managerial discourses of "unavoidable" work hazards and mineworkers' liability for their own casualty. They slowly moved away from the early industrial belief, enshrined in the Common Law, that occupational risk was part and parcel of the employment contract. In its place, they adopted the labour welfarist perception of human losses, that is, the prioritization of safety and security of working peoples' lives. Conscientious medical professionals, labour activists, and the Government of India took an interest in research on occupational health and

Southern Africa, 65 (2008), pp. 68–93; R.M. Packard and David Coetzee, "White Plague, Black Labour Revisited: TB and the Mining Industry", in Jonathan Crush and Wilmot James (eds), *Crossing Boundaries: Mine Migrancy in a Democratic South Africa* (Cape Town, 1995), pp. 101–115; Jaine Roberts, *The Hidden Epidemic Amongst Former Miners: Silicosis, Tuberculosis and the Occupational Diseases in Mines and Works Act in the Eastern Cape, South Africa* (Durban, 2009).

[8]The Indian coalfield of Jharia is located in Dhanbad district (erstwhile Manbhum), eastern India. Its coal beds covered about 175 square miles.

[9]The plebeian public sphere, following Habermas, extended the intentions of the liberal bourgeois public sphere to uneducated people and the working class by applying both literary and non-literary means of rational, critical debate and discussion for the formation of public opinion. J. Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society* (New York [etc.], 1989/1962). The concept of plebeian public may resonate with Fraser's formulation of subaltern counterpublic(s); Nancy Fraser, "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy", *Social Text*, 25/26 (1990), pp. 56–80. However, unlike the notion of subaltern counterpublic(s), the plebeian public does not imply its binary nor a contestatory polarity vis-à-vis the liberal bourgeois public.

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safety and the need for regulation from the early 1940s. Through this, they encouraged a stable, experienced, healthy, and contented workforce to commit to industrial efficiency and national reconstruction. All this steered the exercise of classification by industrialists, the Inspectorate of Mines, and the Labour Department towards definite changes. Consequently, the problem of underreporting diminished and occupational disease received belated recognition. The two approaches by industrialists and working people, of asserting claims and counterclaims, tended to converge in both narrow and broad restitution measures. Even when such an approach partially addressed the problem of treacherous work conditions, it ironically valorized the narrative of danger, risk, and sacrifice in mineworkers' lives. Thus, working people led public protests over disasters but came to terms with minor casualty and increasingly fought for compensation claims in both cases.

Point of Departure

Some scholars have argued that, in many instances, employers neglected requirements for the safety and health of workers and denied rehabilitative assistance to bereaved working families. Employers sacrificed workers' health for profits for a long time.[10] When the laws of compensation, safety, and penalty for accidents were stipulated, capitalists compared the cost of implementing safety measures with that of accidents and compensation. Based on this cost–benefit comparison, in countries such as the US, Germany, and Britain, profitable and capital-intensive industries chose to invest in safety measures from the turn of the twentieth century, while less profitable industries looked the other way.[11]

Another strand of scholarship has pointed out that the adoption of measures for the recognition of occupational risk, protection, and rehabilitation was painfully slow. Employers and the state, in most instances, ignored the application of these measures or only implemented them selectively to suit the logic of profitability, cost minimization, and socio-political imperatives.[12] These arguments regarding the

[10]Eric Geerkens, "Silica or Coal? Design and Implementation of Dust Prevention in the Collieries in Western Economies, ca. 1930–1980", in Rosental (ed.), *Silicosis: A World History*, pp. 173–205; Roberts, *The Hidden Epidemic*; Geoffrey Tweedale, *Magic Mineral to Killer Dust: Turner & Newall and the Asbestos Hazard* (Oxford, 2000); Sue Bowden and Geoffrey Tweedale, "Mondays Without Dread: The Trade Union Response to Byssinosis in the Lancashire Cotton Industry in the Twentieth Century", *Journal of the Social History of Medicine*, 16 (2003), pp. 79–95; Burke, "Disease, Labour Migration", pp. 78–89; Gillian Burke and Peter Richardson, "The Profits of Death: a Comparative Study of Miners' Phthisis in Cornwall and the Transvaal 1876–1918", *Journal of South African Studies*, 4 (1978), pp. 147–171.

[11]Farrenkopf, "Accidents and Mining"; Paul Stewart and Dagmar Kift, "On Fatalities, Accidents and Accident Prevention in Coalmines: Colliers' Safety Discourse in Oral Testimony from the Ruhr in Germany and the Witbank Collieries in South Africa", in Berger and Alexander (eds), *Making Sense of Mining History*, pp. 212–233; D.W. Rogers, *Making Capitalism Safe: Work Safety and Health Regulation in America, 1880–1940* (Urbana, IL [etc.], 2009); Tweedale, "Magic Mineral", Higgens-Evenson, "From Industrial Police"; Mark Aldrich, *Technology, Labour and Business in Building of American Work Safety 1870–1939* (Baltimore, MD, 1997).

[12]J. LaDou, Leslie London, and Andrew Watterson, "Occupational Health: A World of False Promises", *Environmental Health*, 17 (2018), pp. 1–8; Paul-André Rosental and Bernard Thomann, "Silicosis and 'Silicosis': Minimizing Compensation Costs; Or, Why Occupational Diseases Cost So Little", in Rosental (ed.), *Silicosis: A World History*, pp. 140–172; McCulloch, "Medicine, Politics and Disease", pp. 543–556;

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profits of death, accident cost, and selective-cum-minoritarian welfare – though not ignorant of the underreporting and invisibilization of casualty cases – are preoccupied with the nature of the workplace and financial considerations. They underestimate the role of the classification praxis worked out by employers to project a benign image and avoid paying compensation, as well as other stakeholders' contestation of the classification schema.

My discussion on the techniques of managing the statistical and discursive representation of work hazards and human losses speaks to the observations of some other commentators. Mills and others suggest that neither the profit motive nor capital's negligence of occupational health and safety *fully* determined the classificatory exercise in nineteenth- and early twentieth-century Britain.[13] They underscore the invisibility of occupational risk and stakeholders' attempts to make such risk visible, as well as the limits of such efforts, which included engagement with geophysical and medical sciences, laws, stakeholder bargaining, and economic factors such as employment, profitability, cost of reproduction, and so forth.[14]

Roy formulates a similar argument in a study on natural disasters in colonial India. Roy describes the colonial government as a modern (capitalist) power founded as a knowledge-seeking enterprise.[15] The state invested in the development of knowledge to deal with climatic risks on a historic scale. The social contract and coordination influenced the adoption and outcome of relief schemes and disaster control measures. State power appears, in Roy's account, to have been proactive and judicious in its mission. In contrast, the native commoner usually surfaced to disturb and disorient the disaster management undertaken by the colonial authority, while their voice in the knowledge enterprise remains out of sight. My study extends Mills's and Roy's approaches to the study of classification exercises in

Ravi Ahuja, "A Beveridge Plan for India? Social Insurance and the Making of the Formal Sector", *International Review of Social History*, 64 (2019), pp. 207–248; Roberts, *The Hidden Epidemic*; Tweedale, *Magic Mineral*; Burke, "Disease, Labour Migration", pp. 78–87; Geerkens, "Silica or Coal?"; Packard and Coetzee, "White Plague"; Bradley Bowden and Beris Penrose, "Dust, Contractors, Politics and Silicosis: Conflicting Narratives and the Queensland Royal Commission into Miners' Phthisis, 1911", *Australian Historical Studies*, 37 (2006), pp. 89–107; A. Mukhopadhyay, "Risk, Labour and Capital: Concern for Safety in Colonial and Post-Colonial Coal Mining", *Journal of Labour Economics*, 44 (2001), pp. 63–74; D. Simeon, *The Politics of Labour under Late Colonialism: Workers, Union and the State in Chota Nagpur, 1928–39* (Delhi, 1995), pp. 162–168; D. Simeon, "Coal and Colonialism: Production Relations in an Indian Coalfield, 1895–1947", *International Review of Social History,* 41 (1996), pp. 83–108; I. Qadeer and D. Roy, "Work, Wealth and Health: Sociology of Workers' Health in India", *Social Scientist*, 17 (May–June 1989), pp. 45–92.

[13]Mills (*Regulating Health and Safety*), Mclvor and Johnston (*Miners' Lung*), Tweedale (*Magic Mineral*), and McCulloch ("Medicine, Politics and Disease") have also contributed to a similar exposition. See also A. Perchard and K. Gildart, "Buying Brains and Experts: British Coal Owners, Regulatory Culture and Miners Health, 1918–46", *Labour History*, 56 (2015), pp. 459–480.

[14]*Ibid*.

[15]T. Roy, *Natural Disasters and Indian History* (Delhi, 2012), pp. 23, 64. Roy's comment is contrary to Chakrabarty's thesis of the pre-bourgeois form of power and Behal's thesis of colonial-capitalist forms of power exercised by capital in colonial India. Both underline managerial-cum-supervisory corruption in documentation of the condition of the working classes as a cruel feature of the culture of classification; D. Chakrabarty, *Rethinking Working Class History: Bengal 1850–1940* (Princeton, NJ, 2000), pp. 65–115; R.P. Behal, *One Hundred Years of Servitude: Political Economy of Tea Plantations in Colonial Assam* (Delhi, 2014), p. 115.

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Indian mines. However, it observes that, contrary to Roy, the state and managerial power seem not to have been proactive or forthright in perfecting the classification exercise, nor did mine workers remain indifferent towards and insulated from the knowledge-seeking enterprise.

Work, Workforce, Management, and Casualty

Occupational risk and its classification patterns arose out of the modality of production process, workforce organization, management institutions, and an accident control mechanism. In the Indian coalfield of Jharia, coal output grew about sixfold – from approximately 4 million tons per annum to over 23 million tons – from 1900 to 1971. The first major increase in output occurred in the 1910s and the second in the 1950s–1960s (see Figure 1). These two periods of increase were related to the demand arising from World War I and the increased industrial investment under planned development. The average workforce on the payroll trebled in the period under study, with sharp increases occurring in the 1910s and the 1940s, again in direct response to the world wars (see Figure 1). A combined view on the trends of output and workforce indicates growth in productivity from the 1950s, a period associated with greater use of machinery, an efficient workforce, and mineworkers' welfare.

The ownership of coalmines was private and included both British and Indian owners, although Indian owners' control expanded in the wake of India's independence in the 1940s. The management of collieries was frequently in the hands of mostly British management agencies and, below them, predominantly Indian labour contractors.

Mining work was very labour-intensive, with a low capital-to-labour ratio and little mechanization prior to the mid-1950s. The use of a large number of manual labourers

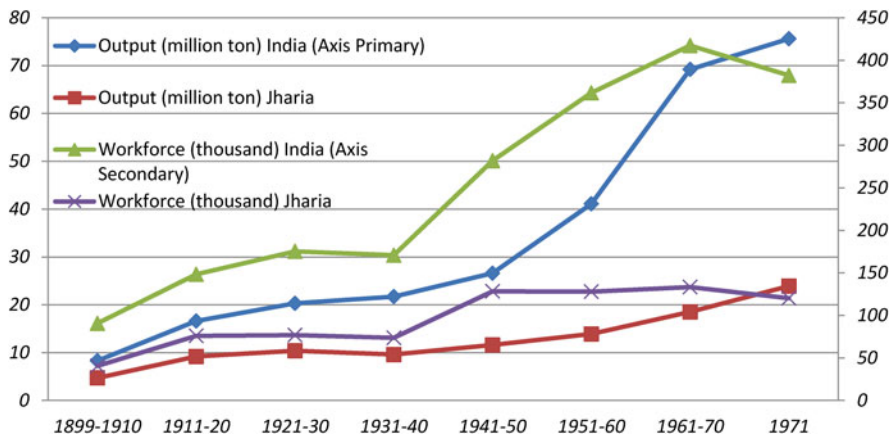

Figure 1. Output and workforce in India and Jharia coalmines.
Source: Annual Report of the Chief Inspector of Mines *(hereafter,* ARCIM*) for 1899–1971* (Calcutta, 1900–1971). *It provides figures for average daily employment in a year, excluding absentees, who were in the range of 20–25 per cent up to the 1930s, about twelve per cent in the early 1950s, and about nine per cent in the mid-1960s.*

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and a small proportion of mechanical, supervisory, and managerial personnel characterized the organization of work. The share of mechanical, supervisory, and managerial personnel increased as greater mechanization and enhanced safety regulations were introduced from the 1920s, and particularly from the 1950s. Such personnel constituted about fifteen per cent of the workforce in the 1960s.[16]

As mining techniques advanced, coalmines went ever deeper and mining took place several levels below ground in both large and medium-sized coalmines. These mines reached depths of approximately 1000–1400 feet by the late 1930s, and 2000–2500 feet by the 1960s.[17]

In the early decades, production workers were largely migrants, originating from 120–700 kilometres away, but they gradually came to settle in the area of the Jharia coalfield. The recruitment of workers usually depended on the labour contractor, called *sirdar*, and a few colliery owners who leased the *zamindary* land and maintained tenants-cum-mineworkers.

Production workers included men, women, and children, with jobs differentiated along gender and age lines. Women and children primarily worked as loaders, carriers, hauliers (called trammers), and coal screeners, both below ground and on the surface of the collieries, while men undertook coal-cutting, blasting, timbering, running water pumps, and other mechanical and supervisory tasks. The Indian Mines Act (IMA) of 1901 prohibited the employment of children below the age of ten. Its amendment, in 1923, raised the minimum age to thirteen, and in 1935 to fifteen. The prohibition on the employment of women in belowground mining in 1929, and its full enforcement from 1946, led to a rupture in the social composition of the workforce.[18]

Coal-cutters (called *malcutta*), loaders, and trammers worked in gangs of ten to twelve in the belowground workplace. They often maintained "autonomy" in the execution of tasks, executing a mining plan outlined by the manager and the overman. The gang, consisting of coalminers, a gang headman, and a lineman (called timber-*mistries*), was responsible for the testing of gases, the supporting roof and sides, and for determining the right size for pillars. Coal workers, under the leadership of a gang headman, relied on their collective practical skill.[19]

Forms of occupational risk included fatality, serious injury, minor injury, and occupational disease. Work hazards varied according to class, rank, and gender. Those who worked below ground faced roughly ninety per cent of workplace risk. Almost 85–90 per cent of victims were adolescent and adult men, as women and children were withdrawn from belowground mining after the 1920s. Prior to the mid-1920s, women and children constituted, respectively, approximately forty-five and five per cent of the belowground workforce and were susceptible to a variety of

[16]*Annual Report of the Chief Inspector of Mines* (hereafter *ARCIM*) for 1920–1969 (Calcutta, 1920–1969), sections on occupational composition.

[17]L.L. Burrows, *Report of the Coal Mines Committee*, Vol. II (Delhi, 1937), p. 511; Ministry of Labour and Employment, *A Note on the Problems of Mining and Mining Safety* (Delhi, August 1961), p. 3.

[18]Dhiraj Kumar Nite, "The Familist Movement and Social Mobility: The Indian Colliers (Jharia) 1895–1970", *Indian Historical Review*, 41 (2014), pp. 297–322.

[19]*Idem*, "Negotiating the Mines: The Culture of Safety in the Indian Coalmines, 1895–1970", *Studies in History*, 35 (2019), pp. 88–118.

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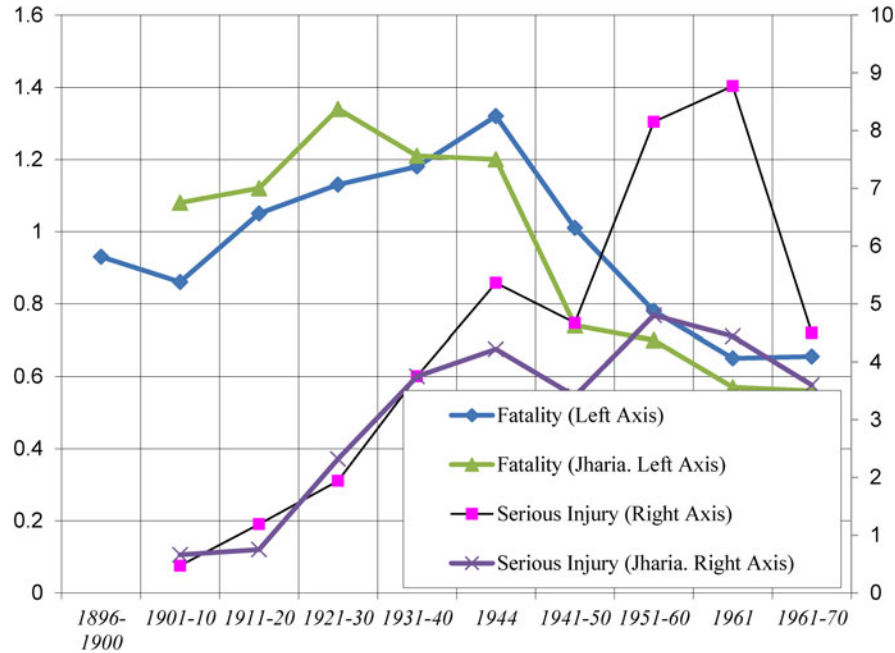

Figure 2. Fatality and serious injury rates (per thousand employees) in the coalmines in India and Jharia. "Serious injury" is defined as a permanent loss of or injury to the sight or hearing, or fracture of limbs, or the enforced absence of the injured person from work over a period exceeding twenty days as per the Workmen's Compensation Act (hereafter, WCA) of 1923 and its amendment in 1959.
Source: ARCIM *for 1896–1970.*

occupational risks.[20] Women were the chief victims when employed as carriers in the quarries. The narrow and sharply sloped pathway was the site of many lethal accidents, either from the worker falling or from coal pieces falling from the carrier baskets. Children and infants were especially vulnerable to tubs of coal being moved around on the surface. Most of the victims were production workers, employed for cutting, blasting, loading, and hauling coal and for preparing supportive and safety measures. Very occasionally, managerial and supervisory staff, such as overmen, junior managers, and inspecting officers, became trapped.

Unsafe mining methods caused an increased number of casualties before moderating in the late 1960s. The fatality rate, that is, deaths per thousand workers, increased up to the mid-1940s, after which it declined. In contrast, the rate of serious injuries causing permanent or temporary disablement worsened up to the mid-1960s before showing signs of moderation in the late 1960s (see Figure 2). At the same time, however, instances of minor injury causing workers to be absent from work for a few days remained high and appeared to worsen (see Table 1). The recognition and categorization of occupational disease, such as coal workers' pneumoconiosis (CWP), advanced from 1952, and it became a compensable source

[20]*Census of Bihar and Orissa of 1921*, Vol. IV, Pt. I (Patna, 1922), pp. 273–276.

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Table 1. Minor injury in Indian mines (over sixty per cent of mineworkers were in the coalmines) for selected years.

Years	Cases	Cases per thousand workers employed
1895–1938	NA	NA
1939	10,584	31
1940	12,880	37
1944	8946	21
1948	8518	17
1950	15,616	26
1961	33,600	77
1962–1970	NA	NA

"Minor injury" is defined as an enforced absence of the injured person from work for a period exceeding ten days, according to the WCA of 1923, and seven days as per the WCA's amendment in 1959. It figured in the statistics after the 1935 International Labour Organization (ILO) convention on mining safety and was discontinued for unknown reasons from 1962.
Source: ARCIM *for 1939–1970.*

of injury in 1959. While its documentation was belated, gradual, and faced persistent managerial prevarication, the Mines Inspectorate reported general cases of respiratory disease, including asthma, tuberculosis, black lung, and occupational disease. The rate of respiratory disease cases per thousand workers, occasionally classified as occupational disease, was fairly high. It generally hovered above twenty per cent and marginally moderated in the 1960s (see Figure 3). Among them, the detection of CWP cases shot up in the 1950s and 1960s. However, the official statistics (see Table 2), based on annual submissions from colliery management and the Mines Inspectorate, fell far short of capturing this painful experience.

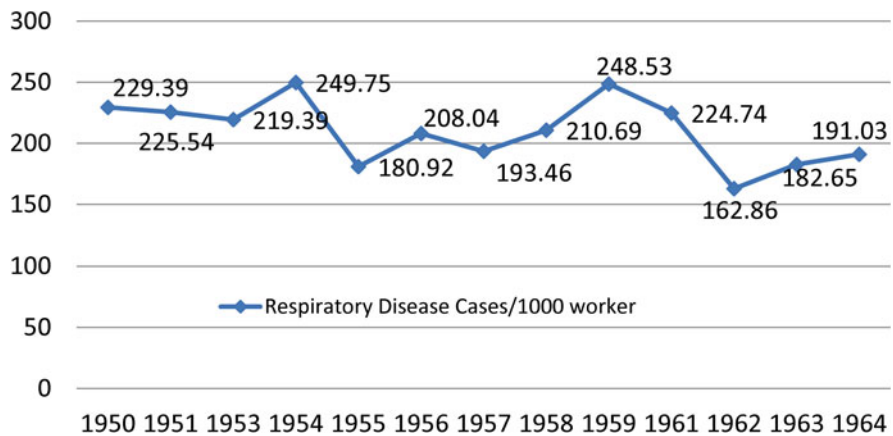

Figure 3. Respiratory disease cases recorded in Bengal coalmines, 1950–1964. The Chief Inspector of Mines reported this series for the Bengal coalfields, from the 1950s, and discontinued it after 1964.
Source: ARCIM *for 1950–1964.*

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Table 2. CWP cases officially recorded in selected years, 1952–1972.

Year	Mining regions	No. of CWP cases
1895–1957	Across India	NA
1958	Across India	01
1962	Bihar, Bengal, Orissa, Madhya Pradesh	10
1963	Andhra Pradesh (AP), Bihar, Madhya Pradesh (MP), West Bengal (WB)	15
1964	AP, Bihar, MP, WB	9
1965	Bihar, WB	12
1966	Bihar, WB	12
1967	Bihar, WB	6
1968	Across India	4
1970	Across India	17

Sources: Indian Labour Year Books *(ILYB) for 1963–1970 (Delhi)*; ARCIM *for 1901–1971.*

The article, therefore, annotates a non-linear pattern of work hazards. Casualties increased over time: the fatality rate moderated from the late 1940s and the serious injury rate from the late 1960s, whereas minor injuries and occupational disease appeared to worsen. Amidst all this, the campaigns for safety, compensation, and proper classification advanced. Indeed, a successful classification exercise contributed to all three areas – proper identification of occupational hazards, safety design, and compensation claims. The next section discusses the causes and intricate procedures of recognition, classification, and documentation of casualty cases, and the claims and counterclaims made by stakeholders.

Ascertainment of Work Hazards and Its Techniques

The casualty trends outlined in the previous section are based on reports submitted by the colliery management and compiled by the Mines Inspectorate from 1895. The influence of the Berlin International Labour (Mining) Convention in colonial India in 1894, the introduction of the IMA in 1901, and its subsequent amendments necessitated these official and managerial activities.[21] Scrutiny of the source materials indicates that managerial reporting, and the consequent official casualty statistics, suffered from underreporting, irregularity, and misleading categorization-cum-representation. They had an imprint of questionable techniques of ascertainment, statistical manipulation, efforts at (in-)visibilization, and unreasonable perceptions of risk. Over time, a shift in these techniques, statistics

[21]The Berlin International Labour (Mining) Convention, held in 1890, was an early effort that pushed the government of colonial India to address the problem of health and safety, especially among women and children. It culminated in the first public [legal] counteraction, known as IMA, in 1901.

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management, and perceptions resulted from the critical intervention of, and new knowledge brought to bear upon them by, contending stakeholders.

The regulation of mining by public authorities on issues such as the safety and health of mineworkers was the chief instrument that gradually generated statistics and knowledge on mining. Prior to 1894, colliery firms did not provide any casualty records, even though the Raniganj coalfield in eastern India had been mined since the 1820s. At the turn of the twentieth century, colliery owners opposed any regulation of mining techniques proposed by the state to ensure the safety of workers and of railway property in mining areas. They argued: "It will be seen that India, in spite of its backwardness, compares well with Great Britain itself as far as the figures of mining accident are concerned."[22] Three decades later, they reiterated the same view before the Whitely [Royal] Commission on Labour (headed by J.H. Whitely).[23]

Many colliery firms resisted the demand for sufficient investment in, and attention to, accident-control measures. Low levels of capital investment, profit maximization, and cost minimization were the influencing factors, alongside the operational dimension of the conservative attitude of industrialists that involved a normative assumption known as the customary Common Law. The Common Law presumed that workers bore liability for casualty, that is, "workers' liability for casualty" (hereafter WLC), as part of the employment contract. Mining companies appear to have drawn upon the British tradition of Common Law and WLC.[24] The Fatal Accident Act of 1855 in colonial India stipulated that the victim had the right to claim damage compensation in case of a casualty suffered because of a "wrongful act, or neglect or default" by the culprit. Working people had to prove their claim of employer fault in court. In the late eighteenth century, the management of the Ichapur Gunpowder Manufactory (Calcutta) offered pensions to its employees who suffered casualties.[25] Similarly, artisans of the Mints under the English East India Company received pensions in their old age after long years of service or infirmity caused by work.[26] The policy arose out of its specific labour–management relationship and partly mirrored the modern military labour contract. A link between such social security schemes and a legislative mandate, or any sustained formal guiding principle, is not yet traceable in the case of mining. Mining management successfully insulated its labour–management relationship from previous Indian instances of pensions/compensation in its industrial employment contract.

[22]National Archive of India (NAI), "Department of Revenue and Agriculture", Geology and Minerals branch, File number 07, 1900, Delhi.

[23]J.H. Whitely, *Report of the Royal Commission on Labour* (hereafter Whitely Report), Vol. IV, Pt. I (Delhi, 1931), p. 245.

[24]Mills, *Regulating Health and Safety*; Rogers, *Making Capitalism Safe*; Karl Figlio, "What Is an Accident?", in Paul Weindling (ed.), *The Social History of Occupational Health* (London, 1985), pp. 180–191.

[25]Jan Lucassen, "Working at the Ichapur Gunpowder Factory in the 1790s: Part 1", *Indian Historical Review*, 39 (June 2012), pp. 19–56; *idem*, "Working at the Ichapur Gunpowder Factory in the 1790s: Part 2", *Indian Historical Review*, 39 (December 2012), pp. 252–271.

[26]Shashank Singh, "Work, Skill and Agency: The Mint Industry in the Late 18th and 19th Century India" (MA dissertation, Ambedkar University, Delhi, 2023).

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

Additionally, management's view was based on an ascertainment of casualty that included two heuristic and discursive devices: the control of statistics and the issues of (in-)visibility and classification. These operational dimensions were located in the dialectics of social forces, such that counterclaims by contending stakeholders for definitive recognition of casualty had to reconstitute the very classification praxis.

The IMA of 1901 and the mining regulations of 1904 empowered the Mines Inspectorate to insist on the prompt and mandatory submission of reports by mine managers. They also laid down safety clauses mandating punishment for persons responsible for accidents and casualties. Colliery management negotiated this twofold regulatory requirement by hushing up accidents, human losses, and their causes in a variety of ways. J.R.R. Pickering, the Chief Inspector of Mines (hereafter CIM), expressed his dismay about management's unreliable reports on an accident that occurred at the Central Kirkend Coal Company's mine:

> This man has left his proper working place and, according to the *sirdar* (supervisor-in-charge), had gone beyond a fence and was getting coal off another pillar. The *sirdar* says he ordered him to come to the proper side of the fence, as he noticed a slip in the roof running along the side of the gallery. […] he did not obey, and before the *sirdar* had gone many yards away, some roof coal […] fell out up to the slip, injured the man, and unfortunately killed the woman.[27]

Pickering rightly observed: "If the *sirdar* did know of the slip, and especially as the man was breaking the rules by being beyond a fence, he ought to have insisted upon the man at once withdrawing."[28]

The propensity of the colliery authority to avoid punishment increasingly led to the mysterious disappearance of eyewitnesses and afflicted workers. Pickering noted in the same report that another accident had occurred at the Jharia Colliery Company's Bhaga mine:

> The evidence in this case is most difficult to obtain. Of the three surviving men, one was not close at hand at the moment and immediately he knew of the accident, he went out of the mine with the two women who assisted them […] Another man disappeared, and the third, who either could not or would not give any clear explanation of the occurrence, died two days later from excessive drinking.[29]

The mysterious disappearance of mineworkers in the aftermath of fatal accidents soon became commonplace in the colliery settlements, a feature that has been captured by Ilyas Ahamed Gaddi and Sanjeev, non-fiction novelists from the Dhanbad–Jharia region, in *Fire Area* and *Sawdhan! Neeche Aag Hai*, respectively.[30]

[27]J.R. Pickering, *ARCIM* for 1907 (Calcutta, 1908), pp. 3–12.
[28]*Ibid.*
[29]*Ibid.*
[30]I.A. Gaddi, *Fire Area* (Delhi, 1994/1982); Sanjeev, *Sawdhan! Neeche Aag Hai* (Delhi, 1986).

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

The Whitely Commission noted in 1931 that the rise in the number of accidents and human losses in the 1920s could be ascribed to better reporting and more accurate classifications in the aftermath of the IMA (Amendment) of 1923–1924, rather than any real increase in accidents. Contrary to this assumption, the urge to hush up relevant information appeared to intensify following passage of the Workmen's Compensation Act (hereafter WCA) of 1923–1924. The Act had some contentious clauses in favour of employers and against victims' compensation claims, for example in cases of casualty resulting from disobedience or disregard for safety precautions by the victim. It also stipulated that the victim should have regularly worked for six months or more for the same employer.

The protests organized after the mid-1920s by labour unions, such as the Indian Colliery Employees Association (ICEA), over the right to compensation and restitution of bereaved working families condemned this tendency towards irregularities in employers' submission of reports to the Compensation Commissioner Office and Mines Inspectorate. P.C. Bose, Vice President of the ICEA, pointed out that Mines Inspectors were occasionally appointed to conduct inquiries and determine responsibility for fatalities, but only in response to protests initiated by the labour unions.[31] In response to such sustained pressure, the Coal Control Board, formed in 1942 under the Coal Commissioner, sternly dealt with industrialists by taking them to court for fabricating their annual statistics and providing fictitious figures concerning accidents and human losses.[32] The Mines Act of 1952 made it mandatory for colliery management to put up a public notice board listing casualties so that an aggrieved worker's family could seek restitution. These countervailing pressures exerted by legislation and organized labour put a check on underreporting and misrecognition. Such countervailing pressures resulted from a significant expansion of state capacity to deal with the exigencies of World War II and the pre-eminence of the labour question in the logic of decolonization in India.[33]

Let us consider the lawsuit filed by Modiba Bibi before the Compensation Commissioner for WCA in 1923.[34] Shabaddi Mian, her husband, was a coal-cutter at Deoli colliery. On 18 December 1951, he succumbed to injuries received when a shower of coal and stone fell on him. On 9 April 1952, the Commissioner awarded the bereaved family compensation in the form of a lump sum payment of Rs 2400. He took into account that the deceased coal-cutter had worked at the mine for fifteen years and was earning Rs 72 a month. Mondal, a manager of the colliery, challenged the compensation award on 14 June 1952. He argued that the fatality occurred due to Mian's negligence and wilful disobedience of the safety measures adopted for the protection of workers. The site of the accident had been declared dangerous and was fenced all around. "Hence, the accident did not arise out of, and

[31] *Whitely Report*, Vol. IV, Pt. II, p. 144.

[32] S.R. Deshpande, *Report on an Inquiry into Conditions of Labour in the Coal Mining Industry in India* (Delhi, 1946), p. 111.

[33] On this, see also Ahuja, "A Beveridge Plan for India?"; Dhiraj Kumar Nite, "Employee Benefits, Migration and Social Struggles: An Indian Coalfield, 1895–1970", *Labour History*, 60 (2019), pp. 372–391.

[34] Bihar State Archive (BSA), "Labour Department", Labour Branch, File No. W4 – 1065/53, January 1954, Patna.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

in the course of his employment. Furthermore, the deceased was not a coal-cutter till about 6 years ago. He worked for several days only and was a casual worker. His daily wage was Rs. 1/8/- only."[35]

This was a contestation over various aspects of the accident compensation rule and the attendance register. On average, the colliery management contested half of all official compensation claims filed by grief-stricken families.[36] The control of circumstantial evidence determined the result of this case in favour of the management. Notably, Modiba Bibi's lawsuit and contestation exemplified the growing tendency of compensation claims and brought Shabaddi Mian's fatality into the public record. This is because the management had not submitted any report of this case to the Inspectorate. In my oral-historical survey, Singhjee (a trammer-cum-labour contractor in the 1950s and 1960s) recounted the forced removal of victims' bodies from the scene of an accident and the threat of the Boiler – recalcitrant workers were threatened with being thrown into the boiler chamber – in the Dubaree colliery.[37] These exercises were a prerequisite for the statistical manipulation, or corruption in documentation, undertaken by employers. However, it was only one method among many of controlling the statistics.

The category of casualties of a non-mining nature, as classified by the colliery authority, emerged as a site of contention over time. Labour activists, including lawyers, teachers, nationalists, and union leaders, drew attention to the exclusion of some casualty types, such as the death of a seriously injured person a few days or a week after an accident. In the late 1930s, the Mines Department began to monitor the health of injured mineworkers and to record off-site fatalities and "minor injuries". The "other fatal accident" category, devised in 1908 to represent fatalities that were presumed to have been "non-mining" in character, was an ingenious instance of controlling the statistics, reducing the fatality figures by 10–15 per cent. A fatal accident at Srikristopur coalmine (Balliram & Company Limited) was, for instance, classified as "other fatal accident" in 1921: "A deceased was found drowned in a sinking shaft, 42 feet deep." Management reported that the deceased person was "mentally defective".[38] Management similarly assigned deaths caused by subsidence, deaths in huts due to the explosion of underprepared gunpowder, deaths of persons knocked down by railway wagons in colliery sidings, and similar incidents to the category of "other fatal accident". The same happened with the deaths of all children and infants working in contravention of the Mines Act. The figures of "other fatal accident" reveal that not a single year passed without a number of children being crushed to death or injured on the surface by moving or overturning coal tubs and railway wagons.

At times, mineworkers confronted employers over the dodgy classification strategy. The Mudidih colliery compensation case of 1928 was such an instance. Juman Khan, a trolley-man, was killed while inside his *dhowrah* (barracks) on the colliery premises.

[35]*Ibid.*

[36]This observation comes from the study of *Annual Reports of the Working of Workmen's Compensation Act, 1923* (ARWCA) for the years 1924–1971 in Bengal (Calcutta: Commerce Department and Labour Department, Government of Bengal).

[37]Author interview with Singhjee, Dubaree colliery, 12 February 2004.

[38]R.R. Simpson, *ARCIM* for 1921 (Calcutta, 1922), p. 73.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

His death occurred owing to subsidence in which several *dhowrahs* were wrecked, killing six and seriously injuring forty others. Juman Khan's widow filed a compensation claim under the compensation laws, but it was denied. The management argued that the fatality did not occur "in the course and out of the deceased's employment"; hence, it was reducible to "other fatal accident". N.P. Thadani, the Compensation Commissioner at Dhanbad, made a recommendation to the government that all accidents like that of Juman Khan should be regarded as occupational hazards, and the victim should qualify for compensation. All cases of mining fatalities should merit compensation, irrespective of causation.[39] Claims for compensation and counterclaims against them in the context of fatalities reduced to the category of "other fatal accident" by management increased and became the most contentious practice in this history of workers' rights. Three decades later, the 1959 Amendment to the WCA favourably addressed this lacuna by incorporating Thadani's recommendation.

Casualties that occurred at an abandoned quarry were discounted. A person visiting a quarry for a bath could fall or drown, as could those who visited a coalmine to get coal from an abandoned seam. The colliery authority classified these mishaps as attempts at suicide by persons suffering "mental depression".[40] The Coal Mines Committee (headed by L.B. Burrows), constituted to look into the sharp increase in disasters in 1935–1936, recommended the stowing and fencing of abandoned collieries. The IMA (Amendment) of 1939 instituted the Stowing Board and empowered it under the Coal Mines Safety (Stowing) Act of 1939 either to financially support owners of abandoned mines to undertake stowing and fencing, or to take initiatives of this kind on its own in order to reduce mishaps.

(In)visibility and Recognition of Occupational Disease

The omissions and discrepancies in the statistics referred to in the previous section seemed purposeful. By contrast, the accounting of occupational disease was impacted by uncertainty over public knowledge of it and contending efforts at (in-)visibilization.

The first Coal Mining Committee, headed by James Grundy (a mining expert from Britain, employed as Mines Inspector in 1894), did not find mining in India injurious to health. To the Committee, ill health meant the stunted growth of persons employed, which it did not find unusual in Indian mines compared with the rest of the population.[41] As early as 1896, Grundy observed that Indian mineworkers regularly took breaks from mining and visited their rural homes to recover their health and strength:

> I did not find that the miners were more subject to diseases than others of their fellows; even where special diseases prevailed such as guinea worm, goitre, etc., or where there was a prevalence of fever, pneumonia, enlargement of the spleen, the

[39]Memorandum submitted to the Whitely Commission by N.P. Thadani: "A Case for Payment of Compensation in All Accidents Involving Death or Serious Permanent Disablement", in *Whitely Report*, Vol. IV, Pt. I, pp. 257–258.

[40]N. Barraclough, *ARCIM* for 1948 (Delhi, 1949), p. 162.

[41]NAI: Department of Revenue and Agriculture, File No. 07 (1), p. 1897.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

> miners did not appear to be more subject to these than other people, or to suffer more or longer when they were the sufferers. But, at one part of the country I found there was *a belief somewhat prevalent that working in the mines had a very bad effect on the workmen's health; and some people went so far as to say that at Khewra it was common talk amongst the natives to the effect that men working in the coal mines could not work for more than a month at a time without having a long rest at home to recover their health and strength.*[42]

Grundy's astonishment that workers behaved in such a way to protect their health was characteristic of several subsequent observations shared by the Inspectorate and employers. They interpreted the work breaks and rural visits that mineworkers undertook to rest and recover their health as an expression of the migratory character of Indian workers.[43] Employers also approved of it, in the interest of preserving the workers' health.[44]

Public authorities were concerned with the destabilizing effects of regular outbreaks of cholera and smallpox, and occasionally of plague, on the workforce and, consequently, on the output of coal. They collaborated with the mining authority to undertake corrective measures and address the problem in the lead-up to World War I, from the early 1910s.[45] However, the preponderance of hookworm (ancylostomiasis), which caused anaemia among mineworkers, did not count in the employer's view as an occupational disease: "This is […] common to all classes of Indian labour."[46] In this view, any consideration of why a general health problem, such as hookworm, was so pervasive and acute as to adversely affect ninety per cent of barefoot belowground mineworkers was irrelevant.

This blinkered vision by colliery management of the conditions of working-class life and work necessitated a discursive investment in explanations of the health effects stemming from the mining environment. Employers introduced the categories of "natural death", "heart failure", "loss of eye-sight and suicide", "death in room after work due to *ganja* (marijuana) smoking", "respiratory diseases", and "epileptic fits", with a view towards explaining away many casualties.[47] In hindsight, we know that disease and casualty resulted from the workers' excessive exposure to: coal dust; silica; nitrous fumes (nitrous oxide, nitric oxide, di-nitrogen trioxide, nitrogen oxide, and nitrogen dioxide); carbon monoxide; methane; arsenic; beryllium; cadmium; fluorine; lead; mercury; and other factors, such as noise and the gruelling heat. Sulphur, carbon, and hydrogen in coal seams generated heat, and workers' regular and excessive exposure to these toxic and enervating effluents resulted in the deterioration of their health and pathological and mental disorders,

[42]NAI: Department of Revenue and Agriculture, Geology and Minerals branch, File No. 13, 1896 (emphasis mine).

[43]NAI: Department of Revenue and Agriculture, Geology and Minerals branch, File No. 07, 1900.

[44]B. Foley, *Report of the Coalfield Committee* (Calcutta, 1920), p. 66.

[45]It led to the constitution of the Jharia Mines Board of Health in 1915, the Jharia Board of Water in 1916, and the Bihar and Orissa Mining Settlement Act, 1919.

[46]*Whitely Report*, Vol. IV, Pt. I, p. 224.

[47]See *ARCIM* for 1908; *ARCIM* for 1914; *ARCIM* for 1935; *ARCIM* for 1948, p. 169; *ARCIM* for 1949, p. 164.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

leading to what Amalendu Das calls their "silent, slow, and steady demise".[48] The belated but systematic research on occupational disease conclusively introduced this knowledge only from the mid-1940s in India, as discussed below.

The official misrecognition of the deleterious effects of the mining environment on the pathological and mental conditions of mineworkers was contrary to what mineworkers experienced and observed in their quotidian life. They looked for a mix of remedies to come to terms with the exigencies of occupational health. Many described spending a high proportion of their income on alcohol consumption, in the belief that it helped bring out the coal dust inhaled during mining.[49]

A coal workers' ditty offers insights on how they negotiated mining hazards:

> We sad coal-cutters,
> Our hand, hard and calloused,
> Our insides dark with dust,
> … … …
> Oh! The heat, the heat,
> Tortures me on and on.[50]

This folksong reflects mineworkers' existential anxiety and their coping with difficulties such as coal dust, black lung, heat, injury, and pain. It conflicted with the employers' naturalization-cum-pathologization of occupational disease. Nevertheless, mineworkers appeared to accept the principles of the Common Law of industrial employment: they recognized the scope of occupational risk and the argument of WLC when taking up employment, unless employers wilfully inflicted injury on their employees. Instead of any pre-capitalist orientation among Indian mineworkers, their belief in the argument of WLC, resonating with the Common Law, was characteristic of several other early industrializing societies in the nineteenth century.[51] The persistence of this "preindustrial belief", as Mills and others have argued, owed to the work relationship defined by piece-rate payment and contractual workload. These conditions underpinned their independent, self-sufficient, and adventurous propensity, resulting in unorganized politics and pessimistic religious views.[52] Indian mineworkers initially lived in similar conditions, but, over time, they underwent a makeover, to which we now turn.

[48]A. Das, "Dust Hazards in Coal Mines: An Overview", in S.C. Joshi and G. Bhattacharya (eds), *Mining and Environment in India* (Nainital, 1988), pp. 195–199.

[49]R. Prasad, *Report of the Bihar Labour Enquiry Committee* (Prasad Report), Vol. II, Pt. I (Patna, 1941), p. 342.

[50]A folksong by Ghuga Mahto (1928), cited in R. Ghosh, "A Study of the Labour Movement in Jharia Coalfield, 1900–1977" (Ph.D., University of Calcutta, 1992), p. 372.

[51]For the US, see Aldrich, *Technology, Labor and Business*, and for Britain, see Mills, *Regulating Health and Safety*; Janet Greenlees, "Workplace Health and Gender among Cotton Workers in America and Britain, 1880s–1940s", *International Review of Social History*, 61 (2016), pp. 459–485.

[52]Mills, *Regulating Health and Safety*; John Rule, "A Risky Business: Death, Injury and Religion in Cornish Mining 1780–1870", in A Bernard Knapp, Vincent C. Pigott, and Eugenia W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining* (London, 1998), pp. 155–173).

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Coal workers began to organize and form unions in the aftermath of World War I. They began articulating a labour welfarist view of occupational risk and human loss. They received encouragement from the new philosophy and politics of progress and the impact of the International Labour Organization's (ILO) campaign for a humane and civilized life for working people.[53] One of the offshoots of their efforts, the WCA of 1923–1924, fell short of addressing occupational disease and the misleading categorizations of several types of casualty. LaDou rightly suggests that the ILO's advocacy for workers' protection from injury, disease, and sickness suffered from its weak enforcement capacity in bringing about any recognizable improvement for the great majority of working people around the world.[54] Coal workers slowly took up a two-pronged initiative – compensation claims and the visibilization of casualties – that influenced state inquiries and regulations in India.

Workers increasingly filed compensation claims for casualties, gradually shifting the boundaries of compensable human loss. The case of Kulada Kahalini was such an instance.[55] Her husband, Raju Rawani, a mineworker at Khas Dharmaband colliery, went down the pit at 2 pm on 9 September 1951. While he was cutting coal, he lost consciousness and later died; his cause of death was reported as "heart failure". The management described it "as a case of death due to natural cause rather than arising out of and in course of employment, which is not uncommon on the mines". On this basis, it contested the award of compensation, of a lump sum payment of Rs 2100, to the widow Kulada Kahalini, which the Compensation Commissioner adjudicated on 19 May 1953.

The Compensation Commissioner rejected the managerial argument. He decided the case on the basis of evidence deposed by two eyewitnesses, Heru Rai and Babu Lal Rai, who worked alongside the deceased. In his opinion:

> [the] death might have been due to heart failure. But, there is no evidence on the record to show that the deceased was suffering from high blood pressure before or any other disease which might have caused heart failure. It is, however, obvious that the work on which the deceased was engaged, i.e., cutting of coal is of strenuous nature. A strenuous work in itself is likely to cause diseases, like high blood pressure and cause death due to heart failure. It is now an established principle that if the work itself is capable of accelerating a disease such acceleration would be considered to be an injury. I hold that the heart failure of the deceased was due to the injury, which arose out and in course of his employment.[56]

Notably, this verdict came in the aftermath of the Mines Act of 1952, which recognized the problem of occupational diseases and called for their diligent documentation. The legislative mandate seems to have informed the view of the Commissioner, even as the

[53]Nite, "Negotiating the Mines"; *idem*, "Employee Benefits".

[54]LaDou, London, and Watterson, "Occupational Health'; Joseph LaDou, "International Occupational Health", *International Journal of Hygiene and Environmental Health*, 11 (2003), pp. 1–11.

[55]BSA: "Labour Department", Labour branch, File No. W4–105/53, January 1954.

[56]*Ibid.*

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management appeared habituated to the older classification of human loss in the mines. Kahalini's lawsuit and the testimony of the two eyewitnesses allude to the transformation in workers' beliefs. It impacted classification exercises, including the genesis of the Mines Act of 1952. Mineworkers and their families, along with activists, pursued a vigorous intellectual debate on this front which conditioned the expansion of state capacity in the 1940s and 1950s.

Though belatedly and gradually, medical experts sensitive to workers' welfare, along with labour unions, became some of the key players to initiate and foster the recognition, classification, and documentation of occupational disease cases. As late as 1944–1946, the Bhore Health Enquiry Committee, the first survey on health in the Indian subcontinent, found no sign of CWP, silicosis, cellulitis, or miner's nystagmus (night-blindness) among mineworkers. It confirmed pervasive hookworm infection, the consequent anaemia, and the respiratory problems of belowground mineworkers. It recommended regular inspection of the prevalence of occupational disease.[57]

In a remarkable contrast, Dr V.R. Khanolkar, in a memorandum submitted to the S.R. Deshpande Labour Inquiry Committee in 1945, presented the earliest exposition of health problems resulting from the occupation of mining itself:

> The health authorities ignore the existence of *silicosis* in their published reports and it is probable that many deaths resulting from it lie hidden in the unsorted block of respiratory diseases, which occupy an imposing place in Indian vital statistics. […], although a few cases were reported from Giridih. […] In most of the hospitals visited in Bihar, cases of *Asthma* and those of *Pneumoconiosis* [*respiratory diseases*] were largely in evidence. It would appear that these two diseases have something to do with the nature of underground. *It is possible that these occupational diseases do not exist, but it is equally possible that they are not diagnosed.* Considering that, there are very few dispensaries and hospitals in the coal areas, which have well-qualified doctors with the necessary equipment, such as an X-ray apparatus, a microscope; it is not possible that the average dispensary doctor is in a position to diagnose these cases. This also applies to *tuberculosis* (related to lung and bone problem). There is a strong prima facie case for arranging a periodical examination of miners by experts, and also for equipping hospitals with such medical and surgical equipment as would make the diagnosis of such cases easier.[58]

Dr Khanolkar's memorandum thus defined a novel social development agenda and contributed to the progress of a new "plebeian public" who critically engaged with development policy, recognized remedial measures, and became involved in the mobilization of public opinion. Dr K.B. Roy's work reinforced it through the

[57]Joseph Bhore, *Report of the Health Survey and Development Committee* (Delhi, 1946), Vol. I, p. 79; Vol. II (recommendation), p. 129.

[58]"Dr V.R. Khanolkar's Memorandum on Workers' Health", in Deshpande, *Report on an Inquiry*, pp. 189–192 (emphasis mine).

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irrefutable documentation of CWP cases by the mid-1950s.[59] Their persuasive scientific exposition, and the mineworkers' compelling responses, inaugurated a new age. They persuaded the National Ministry to model its laws on the advanced social and scientific views that were already in currency. In Britain, CWP was classified as a compensable source of injury in 1943, almost three decades after the classification of silicosis as the first compensable occupational disease in South Africa.[60]

The democratic government of the Republic of India arguably followed the logic of Dr B.R. Ambedkar, the Labour Member of the Viceroy-Council (1941–1946), in the sense that it sought industrial efficiency by creating a stable, experienced, healthy, and contented workforce in strategic sectors such as coal.[61] Previously, employers were preoccupied with the continuous supply of migrants and cheap labour to ensure that the haggard workers in the coal pit did not become a drag on the industry. The 1959 WCA (Amendment) identified silicosis, fibrosis, bagassosis, and CWP as compensable occupational diseases. By 1950–1951, the newly formed Coal Mines Labour Welfare Fund Act (1944/1947) set up well-equipped central and regional hospitals to address the problem of lack of equipment such as X-ray machines required for examining afflicted labourers.

Under the Mines Regulation of 1956, the government of India appointed a committee in 1960–1961, headed by M.N. Gupta (Deputy Chief Advisor of Factories) and involving the Mines Department, to investigate and report on industrial diseases. The Committee reported that in contrast to 12.1 per cent in the UK, 18.7 per cent of coalminers were suffering from CWP in the Jharia and Raniganj coalfields in 1960–1961 (Figure 4), with the Jharia coalfield leading at twenty-six per cent.[62] In the following years, the problem of occupational disease was further exacerbated. In the late 1960s, the Indian Council for Medical Research (ICMR), with the help of M.N. Gupta, thoroughly surveyed the situation and reported CWP rates of up to forty-five per cent in the coalmines of the Bihar region.[63]

The official documentation of occupational disease, belated but systematic, was slow to overcome the managerial prevarication over it. Occupational disease took on a public image as an antithesis to the quest for industrial efficiency. Mining communities began to hold colliery management responsible for the scourge of "slow, silent death" and to claim restitution benefits against lung deterioration.[64] The wide gap between the low number of occupational disease cases annually reported by managers (see Table 2) and the worst rates of CWP captured by the two surveys undertaken by the M.N. Gupta committees was attributable to two factors. Firstly, management's control over attendance registers created a hindrance for afflicted workers to prove their regular exposure to coal dust for three or more

[59]K.B. Roy, "Pneumoconiosis in Central Indian Coal-Mines", *British Journal of Industrial Medicine*, 13 (July 1956), pp. 184–186.

[60]Rosenthal, *Silicosis*.

[61]Nite, "Employee Benefits".

[62]M.N. Gupta, *Report on Pneumoconiosis in the Coal Mines in Jharia and Raniganj Coalfields* (Delhi, 1961), p. 46; Mclvor and Johnston, *Miners' Lungs*, p. 57.

[63]M.N. Gupta, *Technical Review on Pneumoconiosis in India*, Technical Report Series No. 4 of the Indian Council of Medical Research (Delhi, 1970), p. 13.

[64]The figure was on an average ten a year in the 1960s. See *ARCIM* for 1962–1970.

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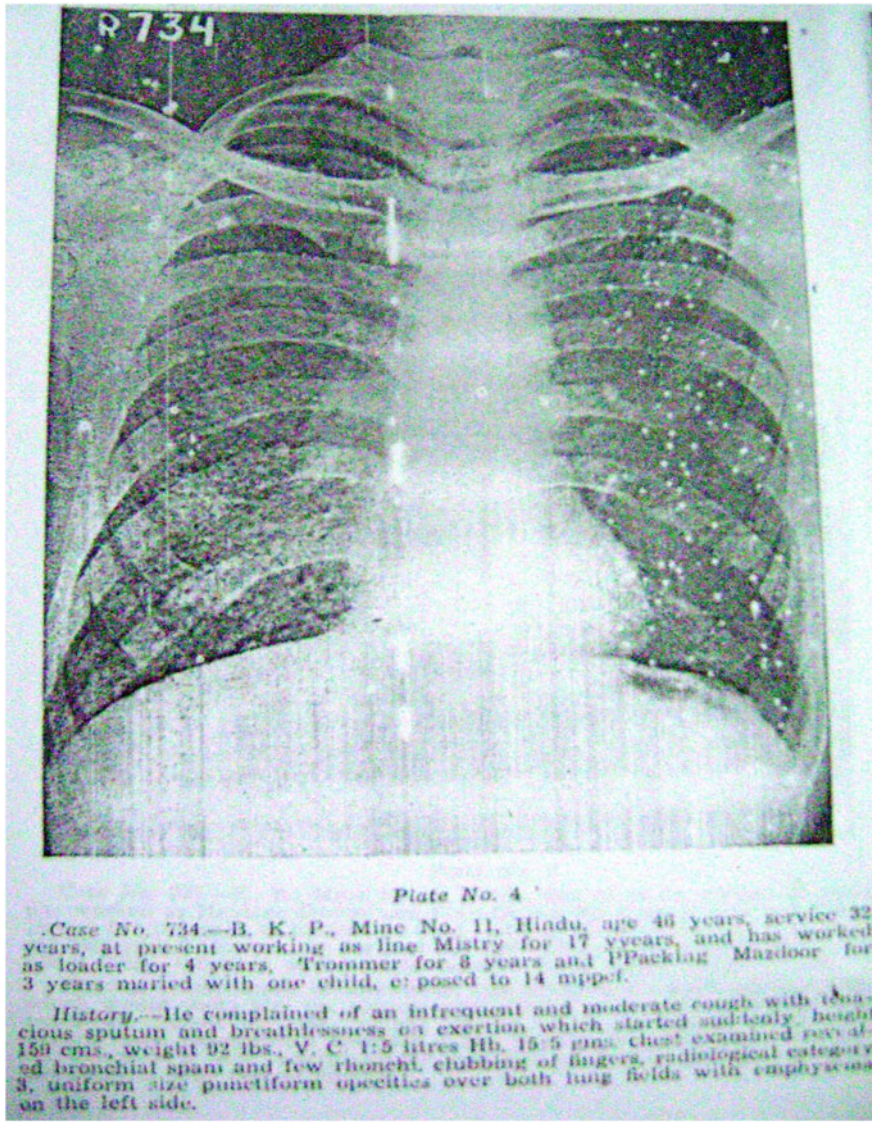

Figure 4. An illustrative case of CWP. In this X-ray, the white dots in the chest are evidence of coal dust, which caused other smoky shades around it.
Source: M.N. Gupta, Report on Pneumoconiosis in the Coal Mines in Jharia and Raniganj Coalfields *(Delhi, 1961).*

years, as required by the WCA (Amendment) of 1959. Secondly, many afflicted workers were anxious about filing compensation claims, owing to fears of being declared "medically unfit" and consequently laid off.[65] A growing public outcry led to heuristic and political engagements, offering workers the possibility of some relief.

[65]BSA: "Labour Department", Labour branch, File no. 1011/69, Proceeding No. 54, September 1970.

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Perceptions of Human Loss and Its Narratives

The previous sections covered the trends of, and approaches to, casualty statistics and classification. They also foregrounded the role played by mining and compensation laws, forms of knowledge, and stakeholder bargaining. However, statistics never existed as a set of abstract figures. The perception of human loss, and the narrative built on it, shaped classification exercises, the agenda of accident-control measures, restitution schemes, and their implementation.[66] Industrialists initially resolved workplace risk in two ways: (i) They often talked about "inevitable risk" and "unavoidable" casualties that resulted from "uncontrollable" geological features associated with mining. They treated such incidences as an interruption in the production cycle. (ii) They frequently regarded workers as a disposable commodity, variously called needy "coolies" or "rats" in the everyday parlance of colliery management.[67]

Industrialists frequently reported that the general health of mineworkers was satisfactory because of the good supply of labour, the absence of cholera outbreaks, and the lower death rate in the mining settlements compared with the rest of the population from the 1920s.[68] This is what Reeder, the officiating Inspector of Mines, reported to Viceroy Curzon, whose tenure saw the establishment of the first IMA in 1901:

> he had repeatedly found *an utter disregard for human life and the many mines were conducted on such inhuman lines* that some remedial action ought to be taken. In many of the mines, the headgear and winding apparatus were unsafe. Elsewhere there was no attempt at proper ventilation. In one case, two hundred and fifty people (men, women, children, and infants) at work, where the ventilation is nil, the air as foul in the extreme with smoke and gases, and the conditions as unfit for human existence. In two other gaseous mines, huge fires kindled in the working galleries, and naked lights suspended from the roof where the cutting was going on. Infants are allowed to be carried and put to sleep in foul places incompatible with health or safety. In another case, three deaths had been caused by a fall of overhanging sand stone due to incompetent management, and the lives of sixty-five other people were in danger from the same cause of this proving that *so little concern was felt for the safety of the miner* that no steps had been taken to ensure it even after the accident referred to previously.[69]

Reeder bemoaned employers' disregard for human life and the little concern they showed for mineworkers' safety. The colonial authorities had woken up to the

[66]Elizabeth T. Kennedy presents a similar argument in her discussion on the perceptions of risk and agricultural practices in Panama and Costa Rica; E.T. Kennedy, "An Analysis of Risk Perceptions: Understanding of Beneficiaries' Concerns in Sustainable Development Activities", in Jeffrey H. Cohen and Norbert Dannhaeuser (eds), *Economic Development: An Anthropological Approach* (Lanham, MD, 2002), pp. 137–160, p. 138.

[67]Gaddi, *Fire Area*; Sanjeev, *Sawdhan!*; Interview with Singhjee.

[68]*ARCIM* for 1927–1970, sections on health conditions.

[69]NAI: Department of Revenue and Agriculture, File. 07, 1900 (emphasis mine).

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

problem around the turn of the twentieth century. Their initiative was aligned with the new approach adopted by public authorities towards the occupational health and safety of workers in Britain itself.[70]

The focus on regard for human life and the safety of vulnerable working people, and the fight against casualties, constituted a new perception of human losses. It spread slowly in terms of the ethics of preservation of working [public] bodies and society in general. In their recent study, Breman *et al.* refer to such ethics and approach as a new social question framed around labour welfare from the late nineteenth century.[71] This new social question was reflected in Prof. V.G. Kale's address to the Indian Industrial Conference at Lahore in 1909, where he proposed the Indianization of the mining industry in the interest of progress and safety.[72] One of the roots of this new thinking and ethics lay in the spirit of republicanism and modern modes of power. Foucault argues that the republican polity and its cultural system aspired to the protection of the "body of society", which was regarded as a new agent and the source of the functioning of a republican power.[73] The limitation of Foucault's argument is its overgeneralization and its inability to explain historical patterns of slow, selective, or adversarial actualization of the republican spirit and ethics. It is equally silent on the shifting contours of republican ethics, for instance, from its focus on human rights to the welfare of working people. Others have proposed additional explanations, including the roles of political economy, stakeholder interests, organization, and public reasoning. This article annotates the development of the labour welfarist perception of human losses that confronted the industrialists' conservativism and contributed to the measures designed to ameliorate occupational health and safety. These measures included the adoption of safety measures, along with punitive provisions of fines and incarceration for the infringement of safety rules, and the introduction of compensation and restitution schemes.

Compensation schemes seized the imaginations of both the public authorities and the mineworkers' association. Labour associations undertook everyday struggles for improved and easy access to compensation benefits. The latter included provisions of adequate medical aid, compensation to all, less litigation, and a full salary against the practice of half the victim's salary being paid as compensation money. It increasingly helped workers mitigate their suffering and live fuller lives. Joseph Bhore, Chairman of the Committee for Health Survey and Development, noted that mineworkers were far from being compensated by the "earning difference" that they were awarded, since the challenges they faced included personal and collective grief, mutilated limbs, and loss of sight or hearing. They required adequate and sustained medical care and rehabilitation programmes, including the supply of artificial limbs and artificial eyes, and retraining for those afflicted to enable them to find alternative employment and lead a dignified life.[74] His argument for a fuller

[70]Mills, *Regulating Health and Safety*.

[71]Breman *et al.*, *The Social Question*; Rosental, *Silicosis*.

[72]Cited in H.C. Mookerjee, "Accidents in Coal Mines", Pts I and II, *Hindustan Review* (Patna, December 1945 and January 1946).

[73]M. Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977*, ed. Colin Gordon (New York, 1980), pp. 55–62.

[74]Bhore, *Report of the Health Survey*, p. 76.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

rehabilitation agenda was more robust than the social insurance grounded in the economic utilitarian contents articulated by labour activists.[75] Bhore's assessment for the costs of such a programme exceeded the "earning difference".

These proposals fed into the labour welfarist perception of human losses and, in turn, the plebeian public's perception of them as well. By the mid-1940s, critiques anchored to the labour welfarist perception increasingly regarded mining/industrial casualties as "social", "public" losses that were inhumane, man-made, and avoidable. This narrative was in contrast to the industrialists' insistence on the individuality of occupational casualties, framing them as private losses, and their reluctance to admit to their gravity.

As claims for compensation filed by victims under the WCA increased from the late 1920s, mining companies partnered with insurance companies to pay whatever compensation claims they conceded to. Insurance rates were 3 to 4 annas (Rs. 0.2 to 0.25) per ton of coal in 1929–1930.[76] To overcome their reluctance and contestation of nearly half of victims' compensation claims, trade unions and official investigators repeatedly asked for a government-controlled universal insurance scheme for all workers.[77] While such a scheme was introduced for large factories and other establishments in 1948, known as the Employee State Insurance Act (ESIA), mining companies remained outside its purview. Mineworkers pressed for compensation on a par with the ESIA benefits, medical facilities, and compulsory insurance for all workers from the early 1960s.[78]

The labour welfarist perception of occupational risk and human losses was grounded in a development principle that had three elements: industrialization was necessary, safety measures would mitigate risks, and compensation and restitution schemes would integrate contented, healthy, and experienced workers into the industry. Alongside sharing the new labour welfarist perception, mining communities began to concomitantly project a narrative that valorized the risks and sacrifices they made in the coalmines for industrial advancement. Muhammad Yakub, a loader employed at the Bera colliery, reflected on the interiorization of such a narrative: "Our working in the coalmines and going into a war by a *Javan* (the soldier) are similar activities. The demands for risk and fortitude characterise both the occupations."[79] This plebeian narrative of danger and masculine risk-taking differed from that of the industrialists only in its emphasis on safety and restitution measures. This narrative was wedded to the emergence and consolidation of a particular associational and public life in the colliery settlements.

The narrative of industrial sacrifice, encouraged by labour unions such as the Indian National Mine Workers Federation (INMWF), was influential. Labour unions in the Republic of India depicted casualties borne by coal workers as sacrifices made by the latter in the service of industrial progress. The coal industry

[75]NAI: Department of Industry and Labour, Labour Branch, File no. 3019 (5), 1935.

[76]*Whitely Report*, Vol. IV, Pt. 1, p. 277.

[77]*Ibid*., Vol. II, pp. 184, 191; *Prasad Report*, Vol. II, Pt. B, p. 458.

[78]BSA: "Labour Department", Labour Branch – I/C3 – 107/60, Proceeding No. 55 (May 1961).

[79]Interviews with Md. Yakub, Bera colliery (Muhammadan) *bastee*, 23 December 2003. He had worked in the colliery since the 1950s and became an activist in the communist labour union in the late 1960s. He had migrated from Pratapgarh district in Uttar Pradesh. He retired from colliery work in 2001.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

was a strategic industry upon which the prospect of overall industrialization and national reconstruction was founded. Hence, the sacrifice of the mineworker represented a nationalist sacrifice and was a source of pride. For instance, labour unions of all shades committed to industrial peace and long work weeks in December 1962, when the national government called on them to contribute to the national war effort.[80]

The compelling narrative of risky life and industrial sacrifice in the coalmines even entered the corridors of power and policy design:

> The INMWF, an affiliate of the politically favoured trade union (the Indian National Trade Union Congress, INTUC), demanded the implementation of gratuity *because mining work is hazardous and miners constantly strive to conserve themselves*. Gratuity should be a scheme to provide for the payment of supplementary compensation in case of death or permanent injury affecting the earning capacity of a miner. Now, a large number of workers are dismissed on medical grounds or being medically unfit.[81]

Public authorities shared the union's argument for gratuity as supplementary compensation to grieving families. However, employers were reluctant to implement it until a suitable revision in coal prices was done by the government.[82] Again, the *smaraks* (commemorative monuments: see Figure 5) built in the memory of workers who sacrificed their lives, for instance, in the Chasnala disaster exemplified the new ethics of the plebeian public.[83] The latter received a fillip in the early phase of nationalization of most of the coalmines in 1971/1973.

The Chasnala disaster, which claimed 375 lives in the captive coalmine of ISCO Ltd. in December 1975, ended the trend of moderation of fatality figures. The investigation by the Court of Inquiry identified not just the immediate cause of the explosion and water inundation, but also the problem of the mining plan, lack of knowledge, and the management's culpability. The defendants of the accused managerial personnel described their acts as "carelessness" and "negligence out of the lack of knowledge", whereas the agitating publicists classified their failure as "criminal negligence".[84] The grievous public outcry ensured that colliery workers'

[80]M. Prasad, *The Annual Report of the Indian Mining Association (IMAs)* (Calcutta, 1963). G.S. Jabbi (*ARCIM* for 1962, pp. 10–11) wrote about a few incidences where certain individuals incited workers against the war effort.

[81]BSA: "Labour Department", Labour branch, proceeding no. 55, file no. I/C3 – 10201/69, December 1970.

[82]*Ibid.*

[83]Parry discusses the differential impacts of the discourse of human sacrifice articulated by the Nehruvian socialist state authority engaged in the construction of iron and steel plants. The local people in Chhattisgarh (Durg) areas saw the practice of "construction sacrifice" as a necessity for the safety of a gargantuan engineering project. In contrast, the distant immigrant worker viewed it as a necessary industrial hardship that they bore. J.P. Parry, "The Sacrifices of Modernity in the Soviet Built Steel Town in Central India", in F. Pine and J.D. Pina-Cabral (eds), *On the Margins of Religion* (Oxford, 2008), pp. 233–262.

[84]Rajya Sabha Debate Paper, 2 December 1977. Available at: https://rsdebate.nic.in/bitstream/123456789/426097/1/PQ_103_02121977_S361_p1_p10.pdf; last accessed 3 December 2024.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

Figure 5. *Smarak* of the Chasnala disaster presenting the list of mineworkers who lost their lives in the service of the nation.
Source: Author's collection from a visit to the Chasnala colliery bastee, 3 April 2009.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

"risky life" and "sacrifice" would receive due attention in the restitution measures and rescue operation.[85]

The valorization and hermeneutic deployment of the narrative of mineworkers' risky lives and sacrifice for the nation became operational in a particular manner. Mining communities began to see work hazards resulting in "merely" a few fatalities or injuries as mundane affairs, in contrast to disasters that took a larger number of lives. They approached routine industrial battles as "inevitable" but detested disasters.[86] The interiorization of this narrative mediated the fact that, from the late 1940s, mineworkers began to demand employment for a family member of the afflicted co-worker and alternative surface jobs for disabled colleagues. This became an agenda item of the Second Safety Conference, held in 1966.[87]

Over time, a twofold tendency developed in the mining world: the deification of collieries as the womb of the goddess Kali, and compensation struggles. The deification of belowground mines, and the propitiation of otherworldly spirits, known as the Khadan–Kali, served as "spiritual" assurance to mineworkers.[88] Two points are worth noting here: (i) the belief in belowground spirits did not fully occlude concrete endeavours to prevent mishaps; (ii) it coexisted with miners' knowledge of, and engagement with, the rules of the game of compensation and restitution.[89] These economic–cultural practices served to normalize the industrial order, which continued to be rife with hazards and coal workers' regular negotiation with a precarious existence. Its function was akin to the trope of "blood on the coal" – that is, miners working in dangerous and tough conditions – that commanded sympathy and respect among the general public up to the 1970s in Britain.[90]

Conclusion

This article suggests that classificatory exercises were the quintessential modality of the narrative of occupational risk and labour–management relations regarding occupational health and safety. That is, the ways in which accidents came to be classified influenced the development of an industrial sensibility among workers and mining companies and became part of the public reasoning around mining work. Extant literature has underestimated the cause-and-effect relationship of classification praxis with the punitive clauses of safety regulations, compensation clauses, the public image of firms, forms of knowledge, and stakeholder bargaining.

Marking a methodological departure from the prevalent emphasis on *given* categories of "safety", "risk", and "occupational disease", to mention a few examples, the article demonstrates that the narrative of work hazards fundamentally forged

[85]Interview with Rai Jee, near RP Singh Club (Chasnala colliery *bastee*), 3 April 2008. He was an immigrant from the Arah region, had worked in the Chasnala colliery since World War II, and retired in the early 2000s.

[86]Interviews with Rai Jee.

[87]G.S. Jabbi, *ARCIM* for 1966 (Delhi, 1967), pp. 65–67.

[88]Interviews with Kesho Rawani, Twelve-number incline *bastee* (Bhowra colliery), 14 January 2004.

[89]Dhiraj Kumar Nite, "Worshipping the Colliery-Goddess: Religion, Risk and Safety in the Indian Coalfield (Jharia), 1895–2009", *Contributions to Indian Sociology*, 50 (2016), pp. 163–186.

[90]Jörg Arnold, "'The Death of Sympathy': Coal Mining, Workplace Hazards, and the Politics of Risk in Britain, ca. 1970–1990", *Historical Social Research / Historische Sozialforschung*, 41 (2016), pp. 91–110.

https://doi.org/10.1017/S0020859025000057 Published online by Cambridge University Press

casualty classification patterns. Ascertainment techniques applied to casualty, perceptions of occupational risk, and the politics of restitution shaped the narratives of casualty and defined its classification patterns.

Employers devised various means – underreporting, disappearance of victims, "other fatal accidents" of a non-mining nature, the category of "natural deaths", and fatality in the course of but not as a result of employment – to provide a positive picture of mining through the statistics of hazards and human loss. Employers' blinkered vision of working people's health and safety conditions could not be maintained, however. Critics, and the plebeian public, rose to the challenge of exposing the silence and discrepancies in the statistics and systems of classification. They confronted business-blindness.

From the 1920s, the increasingly informed and organized mineworkers gradually interrogated the twin managerial discourses of "unavoidable" work hazards and mineworkers' liability for their own casualty. They slowly moved away from the early industrial belief, drawn from the Common Law, of occupational risk being regarded as part of the employment contract. They shifted to a labour welfarist perception of human losses, that is, the prioritization of the safety and security of human life. Conscientious medical professionals, labour activists, and the government of India took an interest in research on occupational health and safety and the need for regulations from the early 1940s. Through this, they encouraged a stable, healthy, experienced, and contented workforce to commit to industrial efficiency and national reconstruction. All this steered the classification exercises of industrialists and the public authorities towards definite changes. Therefore, the problem of underreporting diminished, occupational diseases received recognition, and compensation claims expanded.

The two opposing approaches of the industrialists and working people, of asserting claims and counterclaims, tended to converge in both narrow and broad restitution measures. Even when the latter partially addressed the problem of treacherous work conditions, it ironically helped valorize the narratives of danger and mineworkers' risky lives and sacrifice for industrialization and national reconstruction. Now, mining communities raised a public outcry over disasters, came to terms with mundane casualties, and increasingly fought for compensation claims in both cases.

Thus, the article contends that classification was the prism through which identification, measurement, and representation of work hazards and safety functioned for policy deliberation, governmentality, and perception building. Rather than arguing that classification praxis determined work hazards, casualty, and safety, the article demonstrates that the role of classification was heightened in the age of democratic and egalitarian campaigns. The optimistic, pessimistic, and in-between narratives on economic development and the performance of health and safety measures involved a classificatory modality. Thus, it became a terrain of contestation. The plebeian public and organized labour contributed to the favourable transformation of classification exercises to secure mine workers' safety and rehabilitation and to come to terms with the "risky" life in the mines.

Cite this article: Dhiraj Kumar Nite. Classifying Occupational Hazards: Narratives of Danger, Precariousness, and Safety in Indian Mines, 1895–1970. *International Review of Social History* (2025), pp. 1–28. https://doi.org/10.1017/S0020859025000057