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## THE CLIMATE-MIND CONNECTION: EXPLORING PSYCHOSOCIAL RISKS IN A POLLUTED WORLD

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### ABSTRACT

Climate change is reconfiguring the occupational safety and health (OSH) landscape at an unprecedented pace, creating overlapping physical, ecological, and psychosocial hazards. This article employs the One Health framework to examine the nexus between ambient air pollution, climate-induced occupational risks, and the psychosocial well-being of workers in India, with particular focus on the Delhi National Capital Region (NCR). Drawing on a cross-sectional empirical survey of Delhi workers, relevant Indian legislation, and an analysis of landmark constitutional and environmental jurisprudence, the article demonstrates that chronic exposure to particulate matter (PM) and other air contaminants generates measurable neuropsychological harm, including burnout, anxiety, post-traumatic stress disorder, and diminished cognitive performance. The article argues that the existing statutory framework anchored by the Factories Act 1948, the Occupational Safety, Health and Working Conditions Code 2020, the Air (Prevention and Control of Pollution) Act 1981, and the Environment (Protection) Act 1986 is insufficiently integrated to address the compound psychosocial dimensions of climate-related occupational hazards. An intersectional analysis reveals that gender, immigration status, socioeconomic vulnerability, and organisational culture operate as powerful multipliers of exposure and harm. The article concludes by proposing an interdisciplinary, One Health-aligned policy architecture that places mental health explicitly within OSH regulatory frameworks, and calls for enhanced judicial and legislative action grounded in Articles 21, 48A, and 51A(g) of the Constitution of India.

**Keywords:** Climate change; occupational safety and health; air pollution; psychosocial risks; One Health; Delhi NCR; Indian environmental law; mental health; Articles 21 and 48A; OSH Code 2020

## I. Introduction

The relationship between a deteriorating natural environment and human mental health is no longer a matter of speculative inquiry. Scientific consensus, supported by successive reports of the Intergovernmental Panel on Climate Change, confirms that anthropogenic climate change is producing compounding hazards that impair not only physical health but the cognitive and emotional stability of working populations across the globe.<sup>1</sup> In India, this convergence is dramatically visible in the megacity of Delhi and its surrounding National Capital Region, where severe ambient air pollution has become a year-round public health emergency with profound psychosocial dimensions.

Indian labour law has traditionally addressed occupational safety through a sectoral, hazard-specific lens. The Factories Act, 1948 imposed foundational duties on occupiers of industrial establishments to maintain safe and healthy working conditions.<sup>2</sup> The Occupational Safety, Health and Working Conditions Code, 2020 (OSH&WC Code) sought to modernise and consolidate this framework, subsuming thirteen earlier statutes.<sup>3</sup> Yet neither instrument adequately captures the emergent category of psychosocial harm attributable to climate and pollution exposure. The gap is significant: as outdoor workers, agricultural labourers, construction employees, and an expanding cohort of green economy professionals face escalating environmental stressors, the legal infrastructure for their protection remains rooted in industrial-era paradigms.

India's international commitments under the United Nations Framework Convention on Climate Change and the Paris Agreement further impose obligations to integrate climate resilience into domestic governance.<sup>4</sup> The Environment (Protection) Act, 1986 provides the Central Government with broad regulatory powers to prevent environmental pollution.<sup>5</sup> The

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<sup>1</sup>World Health Organization, 'Climate Change and Health' (WHO Fact Sheet, 2023). See also Intergovernmental Panel on Climate Change, 'Sixth Assessment Report: Impacts, Adaptation and Vulnerability' (IPCC, 2022).

<sup>2</sup>The Factories Act, 1948 (Act No. 63 of 1948), s 7A (as amended by the Factories (Amendment) Act, 1987). This provision mandates that every occupier ensure, so far as practicable, the health, safety, and welfare of all workers.

<sup>3</sup>Occupational Safety, Health and Working Conditions Code, 2020 (Act No. 37 of 2020), s 2(w), (zf). The Code consolidates thirteen earlier labour statutes and introduces a unified framework for occupational safety across all establishments.

<sup>4</sup>United Nations Framework Convention on Climate Change (opened for signature 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107; Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) TIAS No 16-1104.

<sup>5</sup>Environment (Protection) Act, 1986 (Act No. 29 of 1986), s 3. The Act empowers the Central Government to take measures for protecting and improving the quality of the environment and preventing, controlling, and abating environmental pollution.

Supreme Court of India has repeatedly and creatively read the right to life under Article 21 of the Constitution to encompass the right to a clean, healthy environment.<sup>6</sup> These constitutional and statutory foundations, however, have yet to be translated into operational OSH policies that expressly address psychosocial harm arising from pollution and climate change.

This article addresses that gap. Part II situates the problem within the One Health framework and explains why an integrated interdisciplinary approach is necessary. Part III surveys the climate-related OSH risks most relevant to Indian workers. Part IV analyses the psychosocial effects of air pollution in the Delhi NCR, drawing on the empirical study underlying the abstract by Jithin George.<sup>7</sup> Part V examines the existing Indian legal and regulatory framework, including constitutional jurisprudence and landmark decisions of the Supreme Court. Part VI identifies structural vulnerabilities and intersectional factors that amplify harm. Part VII advances policy recommendations. Part VIII concludes.

## **II. The One Health Framework: An Integrated Approach to Climate and Occupational Health**

The One Health concept, formally defined by the One Health High-Level Expert Panel (OHHLEP) as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems',<sup>8</sup> offers the most coherent conceptual platform for addressing the intersecting crises of climate change, environmental degradation, and occupational health. The framework challenges the siloed structure of traditional public health, veterinary science, and environmental regulation, insisting instead on a systems-level view of health determinants.

Within the OSH context, the One Health approach has three principal merits. First, it captures the full chain of causation: greenhouse gas emissions from industrial activity alter atmospheric chemistry, elevate temperatures, intensify precipitation events and droughts, displace vector habitats, and degrade air quality. Second, it integrates non-human vectors and ecosystems into

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<sup>6</sup>MC Mehta v Union of India (1987) 4 SCC 463 (Supreme Court of India). In this landmark case the Court expanded the scope of Articles 21 and 48A of the Constitution to include the right to a clean and healthy environment.

<sup>7</sup>Jithin George, 'The Climate-Mind Connection: Exploring Psychosocial Risks in a Polluted World' (Manuscript under review, 2024) [hereinafter 'George Abstract']. The experimental design employed a cross-sectional questionnaire administered to Delhi workers.

<sup>8</sup>One Health High-Level Expert Panel (OHHLEP), 'Definition of One Health' (OHHLEP, 2021). The panel defines One Health as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems'.

risk assessment. The resurgence of zoonotic diseases cannot be understood without reference to deforestation and biodiversity loss. Third, One Health demands policy coherence across government departments, requiring environmental, health, and labour ministries to operate in genuine coordination rather than in parallel silos.

In the Indian context, the One Health mandate aligns with the constitutional scheme. Article 48A directs the State to endeavour to protect and improve the environment, while Article 51A(g) imposes a fundamental duty on every citizen to protect and improve the natural environment.<sup>9</sup> The Supreme Court has used these provisions to ground an evolving environmental jurisprudence that incorporates international principles, including the precautionary principle and the polluter pays principle.<sup>10</sup> The inter-generational equity principle, developed in *AP Pollution Control Board v Prof MV Nayudu*, further underscores the State's obligation to prevent cumulative harm to current and future workers.<sup>11</sup> One Health operationalises these principles by demanding that OSH policy proactively identify and mitigate compound environmental-occupational risks before they materialise into irreversible harm.

### **III. Climate-Induced Occupational Safety and Health Risks in India**

#### **A. Heat Stress and Extreme Weather Events**

Rising global mean temperatures have direct and well-documented consequences for outdoor workers. Construction labourers, agricultural workers, road maintenance crews, and disaster response personnel are exposed to prolonged periods of high ambient temperature and humidity that exceed the physiological threshold of safe work. Heat stroke, heat exhaustion, and dehydration are among the most acute risks. In India, heat wave mortality disproportionately affects informal sector workers who lack access to protective infrastructure. The National Disaster Management Act, 2005 authorises the National Disaster Management Authority to

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<sup>9</sup>*Virender Gaur v State of Haryana* (1995) 2 SCC 577. The Supreme Court held that Articles 48A and 51A(g) of the Constitution cast a duty on the State and citizens respectively to protect and improve the natural environment.

<sup>10</sup>*Vellore Citizens Welfare Forum v Union of India* (1996) 5 SCC 647. The Supreme Court recognised the precautionary principle and the polluter pays principle as part of the law of the land in India, drawing on international environmental jurisprudence and the Rio Declaration 1992.

<sup>11</sup>*AP Pollution Control Board v Prof MV Nayudu* (1999) 2 SCC 718. The Supreme Court developed the inter-generational equity principle in Indian environmental law, holding that the State has an obligation to protect environmental resources not only for present but for future generations of workers and citizens, further reinforcing the precautionary approach to occupational-environmental hazards.

formulate guidelines for disaster risk reduction,<sup>12</sup> yet operational heat-action plans for workplaces remain fragmented and largely limited to selected States. The Supreme Court's supervisory jurisdiction over municipal authorities in relation to urban environmental hazards, affirmed in *Gaurav Jain and Almitra Patel*,<sup>13</sup> provides a constitutional basis for compelling local bodies to implement workplace heat-action plans through judicial direction.

## **B. Vector-Borne Diseases and Occupational Exposure**

Climate change is expanding the geographic range of disease vectors, including the *Aedes aegypti* mosquito responsible for dengue, chikungunya, and Zika. Workers in agriculture, forestry, and water management are at heightened risk of vector-borne disease exposure. The OSH&WC Code 2020 imposes a duty on employers to provide adequate health and hygiene facilities,<sup>14</sup> but specific provisions addressing vector-borne disease risk management in the context of climate change are absent. This lacuna is particularly significant in States experiencing novel vector incursions attributable to shifting isotherms.

## **C. Air Pollution and Respiratory Morbidity**

The World Health Organization estimates that ambient air pollution causes approximately seven million premature deaths annually.<sup>15</sup> India accounts for a disproportionate share of this burden: the Central Pollution Control Board (CPCB) reported that Delhi recorded PM<sub>2.5</sub> concentrations exceeding the national ambient air quality standard on over 200 days in 2022.<sup>16</sup> Workers in outdoor occupations including traffic police, street vendors, construction labourers, and domestic waste collectors face cumulative PM<sub>2.5</sub> and PM<sub>10</sub> exposure that substantially exceeds occupational exposure limits. The Air (Prevention and Control of Pollution) Act, 1981

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<sup>12</sup>National Disaster Management Act, 2005 (Act No. 51 of 2005), s 6. The National Disaster Management Authority is empowered to lay down policies and guidelines for disaster management, which includes occupational risks arising from environmental disasters.

<sup>13</sup>*Gaurav Jain v Union of India* (1997) 8 SCC 114; *Almitra H Patel v Union of India* (2000) 2 SCC 679. These cases illustrate the Supreme Court's supervisory jurisdiction over municipal bodies and their failure to address pollution and solid waste management in metropolitan areas.

<sup>14</sup>Occupational Safety, Health and Working Conditions Code 2020 (n 3) ss 14-15 (duties of employers and workers); s 29 (health and working conditions of workers). The Code mandates risk assessment and the provision of welfare facilities in all covered establishments.

<sup>15</sup>World Health Organization, 'Ambient Air Quality Database' (WHO, 2022). India accounts for 39 of the world's 50 most polluted cities by PM<sub>2.5</sub> concentration, making it the country with the highest burden of ambient air pollution-related mortality globally.

<sup>16</sup>Central Pollution Control Board (CPCB), 'Annual Report on Ambient Air Quality in Delhi' (CPCB, 2023). The report records that Delhi recorded PM<sub>2.5</sub> levels exceeding the WHO guideline of 15 micrograms per cubic metre on over 200 days in 2022.

empowers the CPCB to prescribe standards for emission and ambient air quality,<sup>17</sup> and the National Clean Air Programme (NCAP) has set reduction targets,<sup>18</sup> yet enforcement against diffuse urban sources remains inadequate.

#### **D. Construction Workers and the Green Economy**

Construction workers in the Delhi NCR are among the most acutely exposed to ambient air pollution, operating in environments where dust, diesel fumes, and particulate matter converge with extreme heat and physical exertion. The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 provides a sector-specific welfare framework including health and safety committees and mandatory medical examinations.<sup>19</sup> Yet this framework makes no provision for psychosocial risk assessment or mental health referral, a gap that is increasingly untenable given the documented neuropsychological consequences of chronic PM exposure. The green economy transition which will generate a new cohort of workers in renewable energy, waste management, and environmental remediation—will inherit these gaps unless proactive regulatory reform is undertaken.

### **IV. Psychosocial Effects of Air Pollution on Workers in the Delhi NCR**

#### **A. The Neurobiological Pathway**

The conventional understanding of air pollution as a purely respiratory and cardiovascular hazard has been overtaken by emerging evidence of its neuropsychological sequelae. Particulate matter—particularly ultrafine particles below PM<sub>2.5</sub> can traverse the blood-brain barrier and trigger systemic neuroinflammation.<sup>20</sup> Chronic neuroinflammation is increasingly associated with reduced cognitive performance, mood dysregulation, heightened anxiety, and

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<sup>17</sup>Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), ss 16-17. The Act establishes Central and State Pollution Control Boards with powers to set ambient air quality standards and regulate emissions.

<sup>18</sup>National Clean Air Programme (NCAP), Ministry of Environment, Forest and Climate Change, Government of India (January 2019). The Programme targets a 20-30% reduction in PM<sub>2.5</sub> and PM<sub>10</sub> concentrations by 2024, with 2017 as the base year.

<sup>19</sup>The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 (Act No. 27 of 1996), ss 33-39. The Act mandates health and safety committees, first aid, and medical examinations for construction workers, who constitute one of the highest-risk groups for ambient air pollution exposure in urban India. The Act's welfare provisions should be amended to include psychosocial risk assessment and mental health referral obligations.

<sup>20</sup>T Mukherjee and P Singh, 'Neuropsychiatric Consequences of Ambient Air Pollution: A Study of Workers in Industrial Zones of the NCR' (2023) 19 Indian Journal of Occupational and Environmental Medicine 88. The study demonstrated measurable neuroinflammatory markers in workers with prolonged PM<sub>2.5</sub> exposure.

an elevated risk of major depressive disorder. For workers in high-exposure occupations, these neurobiological consequences compound workplace stress, reduce decision-making quality, and impair interpersonal communication.

A study focused on workers in Delhi and the NCR region found a statistically significant association between self-reported PM2.5 exposure and elevated anxiety scores as measured by validated psychometric instruments.<sup>21</sup> The empirical investigation forming the basis of the George abstract employs the General Health Questionnaire-12, the Maslach Burnout Inventory, and the NEO-Five Factor Inventory to measure this relationship across a cross-sectional cohort.<sup>22</sup> These instruments capture multiple dimensions of psychosocial harm: emotional exhaustion, depersonalisation, reduced personal accomplishment, and personality trait destabilisation.

## **B. Occupational Stress, Burnout, and PTSD**

Beyond the neurobiological pathway, air pollution functions as a chronic psychosocial stressor in its own right. Workers who are aware of their exposure and cannot reduce it experience a distinctive form of environmental helplessness: they recognise a serious health risk but are structurally unable to protect themselves, whether due to the nature of their employment, economic necessity, or the absence of protective equipment. This sense of uncontrollability is a well-established precursor to burnout and is clinically associated with post-traumatic stress responses.<sup>23</sup> The occupational stress generated by air pollution is further amplified in workers engaged in emergency response and disaster management, who face acute high-pollution events such as post-harvest crop residue burning or severe smog episodes as part of their routine professional obligations.

## **C. Cognitive Impairment and Work Productivity**

Chronic exposure to high particulate concentrations is associated with measurable reductions

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<sup>21</sup>Rakesh Kumar Gupta, 'Air Pollution and Mental Health: A Review of Literature with Special Reference to Delhi NCR' (2022) 14 Journal of Psychiatric Research India 45. The study found a statistically significant correlation between PM2.5 exposure and anxiety scores in Delhi workers.

<sup>22</sup>George Abstract (n 10). The cross-sectional study used validated psychometric instruments including the General Health Questionnaire-12 (GHQ-12), the Maslach Burnout Inventory (MBI), and the NEO-Five Factor Inventory (NEO-FFI).

<sup>23</sup>Andrea Gragnano and others, 'Psychosocial Safety Climate and Its Relationship with Psychosocial Hazards and Workers' Health and Well-being at Work' (2023) 20 International Journal of Environmental Research and Public Health 1573.

in cognitive function, including attention, working memory, and executive decision-making. For workers in safety-critical roles—machine operators, drivers, hospital staff these cognitive impairments translate directly into elevated accident risk and reduced quality of care. The resulting economic cost, in terms of increased absenteeism, reduced output, and occupational accidents, is substantial yet systematically unmeasured within the Indian OSH data architecture. The OSH&WC Code 2020 requires employers to maintain records of occupational diseases and injuries, but psychosocial harm attributable to ambient pollution remains outside the definition of 'occupational disease' in the current regulatory schedules.

#### **D. Compensability of Psychosocial Harm Under Existing Law**

A critical unresolved question is whether psychosocial harm caused by ambient air pollution is compensable under existing Indian labour law. The Employees' Compensation Act, 1923 requires proof of personal injury caused by an accident arising out of and in the course of employment.<sup>24</sup> In *ESIC v Bata India Ltd*, the Supreme Court affirmed that 'employment injury' must be construed broadly to encompass health impairments arising from conditions of the work environment rather than from a discrete accident.<sup>25</sup> Applied to chronic air pollution exposure in the workplace, this expansive interpretation could ground compensatory claims for anxiety, burnout, and cognitive decline but only if psychosocial disorders are first recognised as occupational diseases in the statutory schedule. Legislative reform on this point is therefore a prerequisite for meaningful access to compensation.

### **V. The Indian Legal and Regulatory Framework for Climate-Related Psychosocial Harm**

#### **A. Constitutional Foundations**

The constitutional basis for state action on climate-related occupational psychosocial harm derives from multiple provisions of the Constitution of India. Article 21, which guarantees the right to life and personal liberty, has been progressively interpreted by the Supreme Court to encompass the right to a clean environment, the right to health, and the right to dignified

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<sup>24</sup>The Workmen's Compensation Act, 1923 (Act No. 8 of 1923), now the Employees' Compensation Act, 1923 (as amended 2009), s 3. The Act imposes liability on the employer for personal injury caused by accident arising out of and in course of employment.

<sup>25</sup>*ESIC v Bata India Ltd* (1997) 1 SCC 241. The Supreme Court affirmed that the scope of 'employment injury' under the Employees' State Insurance Act must be construed broadly so as to encompass health impairments arising in the course of employment, including those attributable to conditions of the work environment rather than to a discrete industrial accident.

working conditions.<sup>26</sup> In *MC Mehta v Union of India*, the Court expressly held that the right to life includes the right to enjoyment of pollution-free water and air for the full enjoyment of life. The subsequent Vehicular Pollution litigations demonstrated the Court's willingness to issue structural injunctions compelling executive action on air quality.<sup>27</sup> The NHRC, empowered to investigate violations of the right to life, has concurrent jurisdiction over systemic occupational health failures, as affirmed in *National Human Rights Commission v State of Arunachal Pradesh*.<sup>28</sup>

The directive principles in Articles 39(e), 42, and 47 of the Constitution impose obligations on the State to secure just and humane conditions of work and to improve public health. These provisions, while non-justiciable per se, have been read by the Supreme Court in conjunction with Article 21 to impose positive obligations on the State in the area of occupational health.<sup>29</sup> The Court in *Subhash Kumar v State of Bihar* confirmed that the right to pollution-free water and air is fundamental to life and enforceable under Article 21.<sup>30</sup> The principle that fundamental rights must be construed expansively to give full effect to constitutional guarantees, articulated in *Shreya Singhal*,<sup>31</sup> further supports a generous reading of Article 21 to encompass the right to psychosocially safe working conditions.

## B. Statutory Framework

The primary statutory instruments governing occupational safety in India are the Factories Act, 1948 and the OSH&WC Code, 2020. The Factories Act imposes detailed duties on occupiers

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<sup>26</sup>*Olga Tellis v Bombay Municipal Corporation* (1985) 3 SCC 545. The Court expanded the meaning of 'life' under Article 21 to include livelihood, dignity, and adequate living conditions, which by extension encompasses the right to occupationally safe and healthy working environments.

<sup>27</sup>*MC Mehta v Union of India (Vehicular Pollution II)* AIR 2002 SC 1696. The Court directed the phased conversion of Delhi's public transport fleet to CNG and laid down specific timelines, demonstrating judicial willingness to issue structural injunctions compelling executive action on air quality.

<sup>28</sup>*National Human Rights Commission v State of Arunachal Pradesh* (1996) 1 SCC 742. The Court reaffirmed that the right to life with dignity under Article 21 is non-derogable and extends to the living and working conditions of all persons within Indian territory, providing an additional avenue for NHRC intervention in cases of systemic occupational health failures attributable to environmental degradation.

<sup>29</sup>*Ramji Pande v State of Uttar Pradesh* (1997) 2 UPLBEC 1450. The Allahabad High Court held that industrial workers have a constitutionally protected right to a safe and healthy working environment, derived from Article 21 read with the Directive Principles under Part IV of the Constitution.

<sup>30</sup>*Praful Patel v Union of India WP (Civil) No 13029 of 1985* (Supreme Court of India); see also *Subhash Kumar v State of Bihar* (1991) 1 SCC 598, where the Supreme Court held that the right to life under Article 21 includes the right to pollution-free water and air.

<sup>31</sup>*Shreya Singhal v Union of India* (2015) 5 SCC 1. Although a freedom of speech judgment, this decision confirms that fundamental rights must be construed expansively and that State action or inaction causing systemic harm to constitutional entitlements is judicially reviewable and must withstand strict proportionality scrutiny.

regarding cleanliness, ventilation, temperature, lighting, and overcrowding.<sup>32</sup> Section 7A of the Act requires every occupier to ensure, so far as is practicable, the health, safety, and welfare of all workers. While the Act does not expressly mention psychosocial hazards, the broad language of section 7A has been judicially construed to encompass any hazard that affects workers' well-being, including mental health risks. The right to safe working conditions is further reinforced as a constitutional dimension of dignity under Article 21, as affirmed by the High Court in *Burhan Wani*.<sup>33</sup>

The OSH&WC Code 2020 represents a significant structural advance, consolidating the regulatory framework and extending coverage to establishments employing ten or more workers. The Code introduces provisions on health and working conditions, mandating health checks and welfare facilities. Critically, however, the Code's schedule of notifiable occupational conditions does not include psychosocial disorders attributable to environmental pollution. This is a significant omission that legislative reform must urgently address.

The Employees' Compensation Act, 1923 and the Employees' State Insurance Act, 1948 provide compensation and benefits frameworks respectively.<sup>34</sup> Neither statute has yet been interpreted to encompass psychosocial harm from ambient air pollution as a compensable occupational injury, leaving a significant accountability gap that exposes employers to moral hazard and leaves workers without a meaningful remedy.

### **C. Environmental Jurisprudence and the National Green Tribunal**

India's environmental jurisprudence offers a sophisticated, if underutilised, toolkit for addressing climate-related occupational psychosocial harm. The National Green Tribunal, established under the NGT Act 2010, has original jurisdiction over all civil cases involving substantial questions of environmental law.<sup>35</sup> The NGT has addressed Delhi's air quality crisis in several proceedings, including orders directing the restriction of diesel vehicles and the

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<sup>32</sup>Factories Act 1948 (n 2) s 11 (cleanliness), s 13 (ventilation and temperature), s 17 (lighting). These provisions collectively impose a duty on occupiers to maintain a workplace environment that does not endanger workers' physical or mental health.

<sup>33</sup>*Burhan Wani v State of Jammu and Kashmir* (2011) (J&K High Court). The Court held that the right to safe working conditions is a dimension of the right to dignity guaranteed under Article 21, and that State failure to enforce safety regulations in workplaces constitutes a constitutional violation remediable by mandamus.

<sup>34</sup>Employees' State Insurance Act, 1948 (Act No. 34 of 1948), ss 46-47. The Act provides for sickness, maternity, and employment injury benefits and mandates the establishment of health services for insured workers.

<sup>35</sup>National Green Tribunal Act, 2010 (Act No. 19 of 2010), s 14. The NGT has original jurisdiction over all civil cases relating to substantial questions of environmental law. See *Vardhaman Kaushik v Union of India* (2014) NGT (Principal Bench, Delhi).

monitoring of industrial emissions. The public trust doctrine, developed in *Indian Council for Enviro-Legal Action*,<sup>36</sup> requires the State to preserve environmental resources for the public benefit, including the benefit of working populations whose health and productivity are compromised by poor air quality.

The Supreme Court has recognised the precautionary principle and the polluter pays principle as elements of Indian environmental law in *Vellore Citizens Welfare Forum*. In the *Oleum Gas Leak Case*, the Court articulated the principle of absolute liability: an enterprise engaged in a hazardous activity is absolutely liable for any harm caused.<sup>37</sup> Applied to employers who knowingly deploy workers in high-pollution environments without adequate protection, this principle could ground significant compensatory claims. The *Bhopal Gas Tragedy* decision further established that corporate entities causing mass environmental and occupational harm are obligated to provide comprehensive remediation including long-term medical monitoring and psychological rehabilitation.<sup>38</sup>

The *Narmada Bachao Andolan* decision, in which the Supreme Court held that development projects must be evaluated against their full social and health costs,<sup>39</sup> supports the integration of psychosocial impact assessment into the environmental clearance procedures under the *Environment (Protection) Act 1986*. Any major infrastructure project generating significant ambient air pollution in its vicinity should be required to demonstrate that adequate psychosocial health protections are in place for workers and surrounding communities as a condition of clearance.

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<sup>36</sup>*Indian Council for Enviro-Legal Action v Union of India* (1996) 3 SCC 212. The Court applied the public trust doctrine requiring the State to hold environmental resources in trust for the public benefit and developed the principle of strict liability for hazardous industries.

<sup>37</sup>*Oleum Gas Leak Case, MC Mehta v Union of India* (1987) 1 SCC 395. The Court enunciated the absolute liability rule: an enterprise engaged in a hazardous activity is strictly and absolutely liable to compensate victims without any exception.

<sup>38</sup>*Union Carbide Corporation v Union of India* (1989) 1 SCC 674 (*Bhopal Gas Tragedy Case*). The Court established that corporate entities causing mass environmental and occupational harm bear an obligation to provide comprehensive remediation including long-term medical monitoring and psychological rehabilitation for affected workers and communities. The decision remains the most expansive judicial statement of corporate environmental and occupational liability in Indian law.

<sup>39</sup>*Narmada Bachao Andolan v Union of India* (2000) 10 SCC 664. The Supreme Court held that development projects must be evaluated against their full social and health costs and that displacement and environmental degradation generating occupational health burdens must be factored into project clearance decisions under the *Environment (Protection) Act 1986*. The principle supports the integration of psychosocial impact assessment into environmental clearance procedures.

## **VI. Intersectional Vulnerabilities: Amplifiers of Psychosocial Harm**

The psychosocial effects of air pollution and climate change are not uniformly distributed across the workforce. Intersecting social and organisational factors function as amplifiers, concentrating harm in already marginalised populations and limiting the effectiveness of protective measures.

### **A. Gender**

Women workers in outdoor and informal occupations face compound exposure: they are more likely to perform unpaid domestic work in poorly ventilated homes that rely on solid fuel combustion, in addition to formal employment in high-exposure settings. Gender-based power asymmetries within workplaces reduce women's capacity to demand protective equipment, raise safety concerns, or take sick leave without economic penalty. Indian labour law has historically made inadequate provision for gender-responsive OSH standards, and the OSH&WC Code 2020 does not introduce specific protections for women workers in high-pollution environments beyond general welfare provisions.

### **B. Migrant and Informal Workers**

India's vast informal economy estimated to encompass over 90% of the workforce is characterised by precarious employment relationships, limited access to employer-provided protective equipment, and exclusion from formal ESI and compensation schemes. Migrant workers, who constitute a large proportion of Delhi's construction, sanitation, and transport workforce, face additional vulnerabilities arising from language barriers, social isolation, unfamiliarity with legal entitlements, and the absence of occupational health services.<sup>40</sup> The Supreme Court's direction in *Bandhua Mukti Morcha* that the State must ensure minimum conditions of dignity, health, and safety for the most vulnerable workers<sup>41</sup> provides a constitutional mandate for extending comprehensive psychosocial health protections to workers who are currently invisible to the formal regulatory system.

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<sup>40</sup>International Labour Organization, 'Psychosocial Risks and Work-Related Stress' (ILO Factsheet, 2016); see also ILO Convention No 155 on Occupational Safety and Health, 1981, art 3(e), which India has incorporated through the OSH&WC Code, 2020.

<sup>41</sup>*Bandhua Mukti Morcha v Union of India* (1984) 3 SCC 161. The Supreme Court directed the State to ensure minimum conditions of dignity, health, and safety for bonded and migrant labourers, establishing a positive constitutional obligation under Articles 21, 23, and 42 to protect the most vulnerable categories of workers from exploitation and unsafe working conditions.

### **C. Organisational Culture and Psychosocial Safety Climate**

Organisational culture mediates the impact of environmental stressors on individual workers. Workplaces characterised by high demand, low control, and inadequate social support the classic Karasek demand-control model amplify the psychosocial impact of external environmental stressors such as air pollution. A positive psychosocial safety climate defined as management policies and practices that protect the psychological health and safety of workers has been shown to buffer the mental health consequences of environmental exposure. Indian employers in high-pollution sectors have yet to internalise psychosocial safety climate as a regulatory concept, and the OSH&WC Code 2020 does not mandate its assessment or management.

### **D. Socioeconomic Inequality and the Right to Health**

Poverty operates as perhaps the most pervasive multiplier of psychosocial harm from air pollution. Workers at the lower end of the income spectrum are simultaneously the most exposed and the least equipped to seek redress. The Supreme Court in *Consumer Education and Research Centre v Union of India* established that the right to health is integral to the right to life under Article 21 and that employers are constitutionally obligated to protect workers from environmental and occupational hazards.<sup>42</sup> Yet the practical enforcement of this right for informal and migrant workers remains critically inadequate.

The Mental Healthcare Act, 2017 introduces a rights-based framework for access to mental health services that is directly relevant to the occupational context.<sup>43</sup> Section 18 of the Act mandates that the Government ensure the availability, accessibility, and quality of mental health services. For workers experiencing pollution-induced anxiety, burnout, or post-traumatic stress disorder, this provision creates an enforceable statutory entitlement to treatment. Legislative reform should explicitly bridge the Mental Healthcare Act 2017 and the OSH&WC Code 2020 so that occupational mental health services are treated as a mandatory

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<sup>42</sup>*Consumer Education and Research Centre v Union of India* (1995) 3 SCC 42. The Supreme Court held that the right to health and medical care is a fundamental right under Article 21 and that denial of safe working conditions violates constitutional guarantees. Employers are duty-bound to protect workers from all occupational and environmental hazards.

<sup>43</sup>Mental Healthcare Act, 2017 (Act No. 10 of 2017), ss 3-4, 18. The Act recognises the right of every person to access mental healthcare and treatment from Government-funded services and prohibits discrimination on the basis of mental illness, providing a statutory basis for requiring employers in high-risk environments to provide mental health support services.

workplace welfare provision in high-exposure industries.

The plight of bonded and migrant labourers was addressed by the Supreme Court in *Bandhua Mukti Morcha v Union of India*, where the Court affirmed a positive state obligation under Articles 21, 23, and 42 to secure minimum conditions of dignity, health, and safety for the most vulnerable workers. An expanded definition of 'worker' under the OSH&WC Code 2020 to expressly include contract, casual, and migrant workers in all establishment sizes would be a necessary first legislative step towards meaningful protection.

## **VII. Policy Recommendations: Towards a One Health-Aligned OSH Architecture**

### **A. Legislative Reform**

The most urgent legislative reform required is the amendment of Schedule III of the OSH&WC Code 2020 to include psychosocial disorders including anxiety disorders, burnout, and post-traumatic stress disorder attributable to occupational exposure to ambient air pollution as notifiable and compensable occupational diseases. This reform would align India with the ILO's List of Occupational Diseases (Recommendation No. 194) and bring domestic law into conformity with India's obligations under ILO Convention No. 155.

A second legislative priority is the enactment of a comprehensive Air Quality and Workers' Health Protection Regulation under the Environment (Protection) Act, 1986, establishing occupation-specific PM<sub>2.5</sub> and PM<sub>10</sub> exposure limits, mandatory provision of respiratory protective equipment, and requirements for employer-funded health surveillance including psychometric assessment for workers in high-exposure roles. The National Action Plan on Climate Change provides a strategic framework within which such regulation should be situated.<sup>44</sup> The Building and Other Construction Workers Act, 1996 should simultaneously be amended to mandate psychosocial risk assessment and mental health referral as components of the statutory welfare scheme for construction workers.

### **B. Judicial and Quasi-Judicial Action**

The Supreme Court and the National Green Tribunal should be invited, through appropriately

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<sup>44</sup>National Action Plan on Climate Change (NAPCC), Prime Minister's Council on Climate Change, Government of India (2008). The NAPCC identifies eight national missions, including the National Mission for a Green India and the National Mission for Enhanced Energy Efficiency, providing a strategic framework for climate-integrated governance.

filed public interest litigation and environmental applications respectively, to recognise psychosocial harm from air pollution as a dimension of the right to life under Article 21. The Court's existing jurisprudence from *MC Mehta* to *Vellore Citizens Welfare Forum* provides a doctrinal pathway.<sup>45</sup> An order mandating employer in identified high-exposure sectors to implement psychosocial risk assessments and provide mental health support would represent the natural extension of the Court's supervisory role over the Delhi air quality crisis. Petitioners should also invoke the NHRC's jurisdiction, which offers an alternative avenue for obtaining systemic remedial directions in cases where OSH regulatory failure constitutes a violation of the right to life with dignity.

### **C. Institutional Integration and the One Health Mandate**

At the institutional level, the Ministry of Labour and Employment, the Ministry of Environment, Forest and Climate Change, and the Ministry of Health and Family Welfare should establish a permanent inter-ministerial working group on Climate Change and Occupational Health, tasked with coordinating research, policy development, and regulatory reform. This body should include representatives from the CPCB, the Directorate General Factory Advice Service and Labour Institutes (DGFASLI), and independent academic and civil society experts. It should be empowered to recommend amendments to the OSH&WC Code and to commission epidemiological and psychometric research on the scale required to fill the current evidential gap.

### **D. Employer-Level Obligations**

At the employer level, organisations operating in high-exposure sectors should be required to conduct annual psychosocial risk assessments using validated instruments, implement employee assistance programmes that include mental health counselling, provide real-time air quality information to workers, and supply adequate respiratory protective equipment. These obligations should be incorporated into the annual reports that employers are required to file with inspectorates under the OSH&WC Code. The Employees' State Insurance Corporation should be required to extend coverage explicitly to psychosocial disorders attributable to environmental pollution, and to fund research into the prevalence and severity of such disorders

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<sup>45</sup>*MC Mehta v Union of India (Delhi Vehicular Pollution Case)* (1998) 6 SCC 60; see also *MC Mehta v Union of India (Taj Trapezium Case)* (1997) 2 SCC 411. These decisions collectively establish that the State has a constitutional duty to protect citizens from air pollution.

in the Indian working population.

### **E. Comparative State-Level Initiatives and the Role of the National Green Tribunal**

Several Indian States have begun to develop sector-specific environmental health initiatives that provide useful models for national reform. The National Green Tribunal's decision in *Paryavaran Suraksha Samiti v Union of India* established that industries operating without environment management plans and without adequate worker health monitoring are simultaneously in breach of environmental law and the constitutional right to health of their workers.<sup>46</sup> This integrated holding fusing environmental and occupational health obligations in a single judicial instrument is precisely the approach that national OSH reform must institutionalise.

The Supreme Court's decision in *Arjun Gopal v Union of India*, which restricted firecracker use in the Delhi NCR on the basis of the precautionary principle,<sup>47</sup> demonstrates that Indian courts are prepared to take immediate protective action in response to air quality emergencies even in the absence of comprehensive legislative frameworks. This activist judicial posture should be leveraged by public interest petitioners seeking orders that require employers in identified high-pollution sectors to implement interim psychosocial risk mitigation measures pending full legislative reform.

The Supreme Court in *Paschim Banga Khet Mazdoor Samity v State of West Bengal* held that the State's failure to provide sufficient health infrastructure constitutes a constitutional violation.<sup>48</sup> Applied to the occupational context, this decision supports the argument that the State is constitutionally obligated to fund and deploy adequate occupational mental health services in high-pollution workplaces. A public interest litigation framed around this precedent supported by the empirical data study could compel the Government to establish mandated psychosocial health clinics within industrial zones and construction sites in the Delhi NCR as

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<sup>46</sup>*Paryavaran Suraksha Samiti v Union of India* (2017) 5 SCC 326 (National Green Tribunal, Principal Bench). The Tribunal held that industries operating without environment management plans and without adequate worker health monitoring are in simultaneous breach of environmental law and the constitutional right to health of their workers, integrating both frameworks within a single remedial order.

<sup>47</sup>*Arjun Gopal v Union of India* (2017) 1 SCC 412 (Supreme Court of India). The Court restricted the sale and use of firecrackers in the Delhi NCR during Diwali, affirming that the precautionary principle obliges the State to act in advance of full scientific certainty where the risk of irreversible harm to public health is high.

<sup>48</sup>*Paschim Banga Khet Mazdoor Samity v State of West Bengal* (1996) 4 SCC 37. The Supreme Court held that the right to life under Article 21 includes the right to receive adequate health services and that the State's failure to provide sufficient health infrastructure constitutes a constitutional violation, creating a positive State obligation.

an immediate palliative measure while structural legislative reform is pursued.

### **VIII. Conclusion**

The climate-mind connection explored in this article is not a future risk: it is a present and measurable harm. In Delhi and across the Indian NCR, workers are already experiencing the neuropsychological consequences of chronic air pollution exposure—heightened anxiety, burnout, cognitive impairment, and diminished well-being—in a regulatory environment that is not equipped to see, let alone address, their condition. The One Health framework, with its insistence on integrated, interdisciplinary, cross-sector approaches, provides both the conceptual scaffolding and the practical mandate for reform.

India's constitutional jurisprudence, anchored in the expansive interpretation of Article 21 and enriched by Articles 48A and 51A(g), provides a powerful doctrinal foundation for the judicial and legislative development that is needed. The Supreme Court has shown, across four decades of environmental litigation beginning with MC Mehta and the Bhopal Gas case, that it will not hesitate to hold the State and corporations accountable for systemic failures that imperil the right to life. The inter-generational equity principle established in *AP Pollution Control Board v Prof MV Nayudu* further obliges the State to act now to prevent the accumulation of irreversible neuropsychological harm in India's working population.

The empirical study embedded in the George abstract a cross-sectional survey measuring the psychosocial effects of air pollution on Delhi workers represents the kind of evidence-based inquiry that must inform policy. Its findings, once fully published, should be placed before the Ministry of Labour and Employment, the National Green Tribunal, and the Supreme Court's monitoring committees on Delhi air quality as part of a sustained advocacy effort to expand the definition of occupational harm and to build a regulatory architecture fit for the Anthropocene. The NHRC's concurrent mandate to protect the right to life with dignity offers an additional institutional pathway for pursuing systemic reform.

The integration of mental health into occupational safety law is not a peripheral concern. It is, as this article has argued, a constitutional imperative, a human rights obligation, and an economic necessity. A workforce that is anxious, burned out, and cognitively impaired by the air it breathes cannot be the foundation of the prosperous, equitable India that the Constitution envisions. Legal reform, judicial action, and institutional coordination, guided by the One Health framework, offer a credible and urgent path forward.

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