

MAPPING OF PHYSICAL WORKING ENVIRONMENT CONDITIONS AMONG CIVIL SERVANTS: A DESCRIPTIVE STUDY OF 80 WEST JAVA PROVINCIAL GOVERNMENT AGENCIES IN 2025

Suseno Hadi^{1*}, Atep Juarsa^{2*}, Nellyapuspita^{3*}

^{1*}Manpower Polytechnic (Politeknik Ketenagakerjaan) Ministry of Manpower The Republic of Indonesia, Jl. Pengantin No.71A, RT.7/RW.6, Ciracas, Kec. Ciracas, Kota Jakarta Timur, DKI Jakarta 13740

^{2,3*}Bandung of Occupational Safety and Health Center (Balai K3 Bandung), Jl. Golf Raya No.34, Cisaranten Bina Harapan, Kec. Arcamanik, Kota Bandung, Jawa Barat 40294

Corresponding author email address: suseno.hadi@polteknaker.ac.

ABSTRACT

The physical work environment influences occupational health and productivity among civil servants, yet systematic multi-agency compliance data remain limited in Indonesia. This study mapped physical work environment conditions across 80 West Java Provincial Government agencies using Balai K3 Bandung occupational health laboratory testing data in 2025. This descriptive observational study analyzed secondary data obtained from an occupational health testing program facilitated by West Java Provincial Manpower and Transmigration Social Services Office. Parameters included noise, illumination, thermal climate, indoor air quality, and individual health indicators. Data were analyzed descriptively and compared with relevant regulatory standards. All agencies recorded noise levels well below the permissible exposure limit of 85 dBA. However, only 153 of 525 illumination points met the minimum 300 lux standard, and only five agencies achieved full lighting compliance. Thermal climate was generally compliant, supported by air-conditioning use, although server rooms and storage areas required attention. TVOC and PM10 exceeded limits in 5.3% and 4.7% of spaces, respectively. Among civil servants, 63.9% had elevated blood pressure and 27.2% had low hemoglobin. Illumination was the dominant physical hazard, affecting 70.9% of measurement points. Comprehensive multi-agency testing can support occupational health surveillance in public sector workplaces.

Keywords: Civil servants, Government office, Physical work environment, Occupational health

INTRODUCTION

Implementation of Occupational safety and health (OSH) in public sector has received relatively limited attention in Indonesia compared to other sectors. In fact, that the Indonesian government collectively employ millions of civil servants. Based on the national data, Indonesia has employed approximately 4.28 million civil servants as of 2024 (BKN, 2024). The majority of them posit a sedentary type of jobs where most of their working hours in office environments which could influence with their health and performance. The physical work environment is one of four recognized categories of occupational hazard under Indonesian OSH regulations alongside chemical, biological, and ergonomic/psychosocial factors that dominantly relate with their working environment such as acoustic condition (noise), illumination, and thermal climate. Sumardiyono (2026) found that certain worker characteristics were significantly linked to total cholesterol levels in mining workers, highlighting that occupational exposure including the work environment could affects

metabolic health. This emphasizes the need to systematically assess physical workplace conditions, especially in large bureaucratic organizations like provincial government offices, where such evaluations are still limited.

Ministry of Manpower Regulation (MR) No. 5 of 2018 about OSH of the Work Environment establishes the framework for monitoring and controlling physical environmental factors in all workplaces that employ workers, including government offices (Kemnaker, 2018). Studies from both Indonesia and comparable middle-income countries have documented that inadequate workplace illumination is among the most prevalent yet under-addressed OSH issues in office settings. Mulya et al. (2025) found that average illumination in a transportation company office reached only 145.7 lux, well below the 300-lux standard of MR No. 5/2018. Similarly, a study at a cigarette factory showed that 48.87% of measurement points failed to meet the minimum illumination standard (Widhia et al., 2024). At the national level, Jung et al. (2024) demonstrated in a comprehensive controlled study

that suboptimal office lighting is associated with decreased cognitive performance and adverse psychophysiological responses in office workers, with effects measurable even at illumination levels that employees themselves rate as "adequate."

Due to poor physical work environments may extend beyond individual wellbeing. Studies on this area have consistently linked inadequate illumination with visual fatigue, reduced work accuracy, increased error rates, and lower productivity (Jung et al., 2024; Wijanarko et al., 2024). Similarly, uncontrolled thermal conditions are resulted in heat stress, reduced work focus, and in extreme cases may cause cardiovascular stress (Qin et al., 2023). Especial for civil servant, the consequences are impact to the quality of public services, which is signed by poor concentration and performance among civil servants. This in turn, lead to slower administrative processes, increase error rates in work performance, and ultimately cause lower service delivery to the public.

Government-facilitated multi-agency occupational health testing provides a rare opportunity to generate comparative, large-scale data on the work environment conditions of public sector employees. The program conducted by Bandung OSH Center, covered 80 provincial government agencies in the Bandung metropolitan area, encompassing measurements of physical, chemical, and ergonomic environmental factors alongside individual health screening of civil servant. This study leverages that dataset to map the physical work environment conditions across the 80 agencies, identify the principal areas of non-compliance, and generate evidence to support targeted OSH intervention in the public sector.

The primary objectives of this study were: (1) to describe the distribution of physical environmental parameter measurements (noise, illumination, thermal climate) across 80 West Java Provincial Government agencies; (2) to assess the proportion of measurement points and agencies that met or failed to meet applicable Indonesian OSH working environment standards; (3) to

describe associated occupational health indicators (hemoglobin levels and blood pressure) among the civil servants; and (4) to develop evidence-based recommendations for improving physical work environment conditions in public sector office settings.

METHOD

This study used a descriptive observational design with secondary data analysis. The workplace environment testing was conducted between February and July 2025 in 80 West Java provincial government offices as part of Bandung's OSH Center routine testing activities, funded by the central government and facilitated by the West Java Provincial Manpower and Transmigration Social Services Office.

The study population consisted of all 80 provincial government agencies enrolled in the testing program. Agencies were selected by West Java Provincial Manpower and Transmigration Social Services Office as part of the provincial occupational health surveillance program for civil servant; all the enrolled agencies were

included in this analysis (total population approach). The agencies spanned a wide range of functions, including line offices (Kantor Dinas), regional work units (UPTD), and secretarial units across multiple sectors (health, education, infrastructure, environmental services, finance, and others) located primarily in the Bandung metropolitan area.

Physical environmental measurements were conducted by certified Bandung's OSH Center personnel using calibrated instruments in accordance with Indonesian National Standard/SNI and MR No. 5/2018 protocols. The parameters assessed and corresponding standards applied were as follows: (1) Noise: Measured using a sound level meter at representative points within each agency, with results compared against the TLV of 85 dBA for an 8-hour exposure. (2) Illumination: Measured using a calibrated lux meter at each designated work area point, with results compared against the minimum standard of 300 lux for general office work per MR No. 5/2018 Attachment I. (3) Thermal climate: Assessed using WBGT (Wet-Bulb

Globe Temperature) measurements at representative points, with results compared against TLV based on workload classification. (4) Indoor air quality (KUDR): Included measurements of CO₂, CO, TVOC (Total Volatile Organic Compounds), and PM₁₀ at representative indoor locations. (5) Physical microclimate parameters for Indoor Air Quality: Relative humidity (RH), air movement velocity, and room temperature were measured to assess the adequacy of indoor climate control.

Individual occupational health examination of the civil servants was conducted by Bandung OSH Center's medical personnel as part of the same program and included measurement of hemoglobin (Hb) levels and blood pressure for each participating civil servant. The hemoglobin testing results were classified into three categories; low, normal, or high based on standard reference values (male: 13.5–17.5 g/dL; female: 12.0–15.5 g/dL). Blood pressure was classified per JNC 8 categories: normal (<120/80 mmHg), prehypertension (120–139/80–89 mmHg), hypertension stage 1 (140–

159/90–99 mmHg), and hypertension stage 2 ($\geq 160/\geq 100$ mmHg). Not all civil servants underwent every health examination; therefore, the number of observations varied across individual health indicators depending on the availability of examination results.

The secondary data analyzed in this study were obtained from official occupational health testing reports prepared by Bandung's OSH Center and entered into a structured spreadsheet database for analysis. The environmental measurements were conducted by certified personnel using calibrated instruments in accordance with the Indonesian National Standard (SNI) and Ministry of Manpower Regulation No. 5 of 2018, thereby supporting the quality and reliability of the recorded data. Because the data were obtained from finalized official reports, no additional data cleaning procedures were required. The finalized reports contained no duplicate or missing records; therefore, all available data were included in the analysis. Univariate descriptive analysis was performed to calculate frequencies, proportions, and percentages for each

parameter. Compliance with each standard was expressed as the proportion of measurement points or individuals meeting the applicable threshold. Results were stratified by agency to describe heterogeneity of compliance. Ethics approval was not required because this study analyzed anonymized secondary data obtained from an official government occupational health testing program. No individual patient data or personal identifiable information.

RESULTS

Study Profile and Measurement Points

A total of 80 provincial government agencies in West Java participated in the occupational health testing program under The Bandung OSH Center. These included line offices (Kantor Dinas), regional technical implementation units (Unit Pelaksana Teknis Daerah/UPTD), and secretarial units

across a wide range of governmental functions.

Environmental measurements generated 90 noise measurement points, 525 illumination measurement points, 134 thermal climate measurement points, and 150 indoor air quality measurement sets.

Individual health examinations were completed for 891 civil servants for hemoglobin testing and 871 civil servants for blood pressure measurement. The difference in the number of observations reflects the fact that not all civil servants underwent every health examination during the occupational health testing program. The distribution of agencies across sectors and the multi-parameter design of the testing program make this dataset one of the more comprehensive occupational health baselines available for the Indonesian public sector. Table 1 summarizes the overall measurement results.

Table 1. Proportion of Overall Measurement

No.	Parameter	Sub-parameter	Measurement Result		
			Compliant [n (%)]	Non-compliant [n (%)]	Total [n (%)]
1	Noise	-	90 (100%)	0 (0%)	90 (100%)
2	Illumination	-	153 (29.1%)	372 (70.9%)	525 (100%)
3	Thermal Climate	-	134 (100%)	0 (0%)	134 (100%)
4	Indoor Air Quality	CO ₂	149 (99.3%)	1 (0.7%)	150 (100%)
		CO	150 (100%)	0 (0%)	150 (100%)
		TVOC	142 (94.7%)	8 (5.3%)	150 (100%)
		PM10	143 (95.3%)	7 (4.7%)	150 (100%)

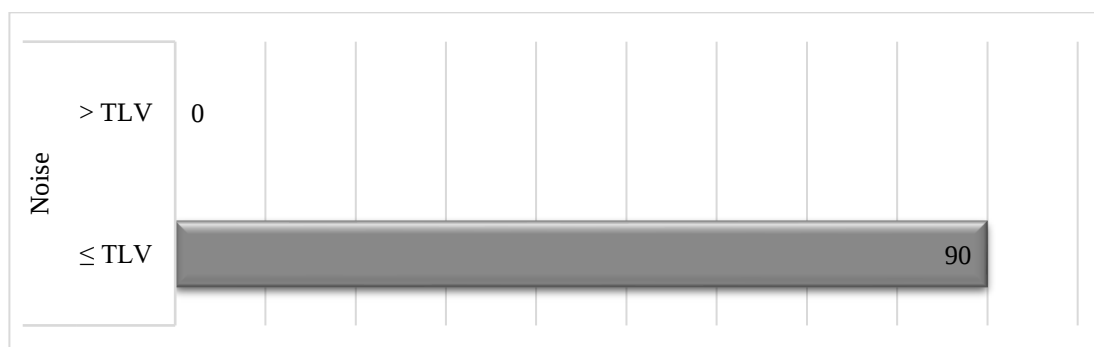
Source: Primary Data, 2025

Noise

Noise measurements were conducted at 90 points across the 80 participating agencies. All 90 points (100%)

recorded noise levels below the TLV of 85 dBA established under MR No. 5/2018.

Table 2. Proportion of Noise Measurement.



	≤ TLV	> TLV	Total
Noise	90	0	90
	(100)	(0%)	(100%)

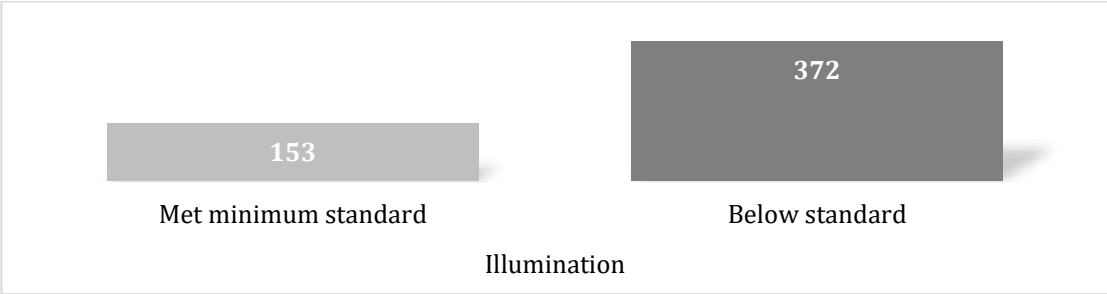
Source: Primary Data, 2025

Workplace Illumination

Illumination was the most problematic physical environmental parameter identified in this study. Of 525 total measurement points across 80 agencies, only 153 points (29.1%) met the minimum standard of 300 lux for general office work stipulated under MR No. 5/2018, Appendix I. A total of 372 points (70.9%) recorded illumination below the standard. At the

agency level, only 5 agencies (6.25%) had all their measured points meeting the standard; 22 agencies (27.5%) recorded non-compliant illumination at every single measurement point; and 53 agencies had partial compliance, with at least one compliant point but failing overall across most of their workspaces. Table 2 presents the illumination compliance profile by agency count.

Table 3. Proportion of Illumination Measurement.



	Met the minimum standard	Below standard	Total
Illumination	153	372	525
	(29.1%)	(70.9%)	(100%)

Source: Primary Data, 2025

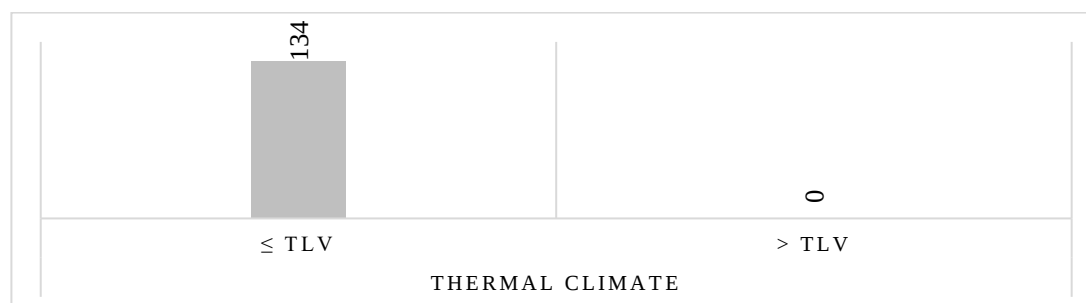
Thermal Climate

Thermal climate measurements were conducted at 134 points across the 80 agencies. All 134 points (100%) recorded WBGT indices below the TLV for light office workload as

specified under MR No. 5/2018. This result is expected in modern government office buildings, the majority of which rely on split-unit air conditioning (AC) systems for cooling, given the tropical climate of Bandung

and West Java. The sustained presence of mechanical cooling systems effectively maintains ambient temperatures and relative humidity within the physiological comfort zone for sedentary workers, preventing heat strain under normal operating conditions.

Table 4. Proportion of Thermal Climate

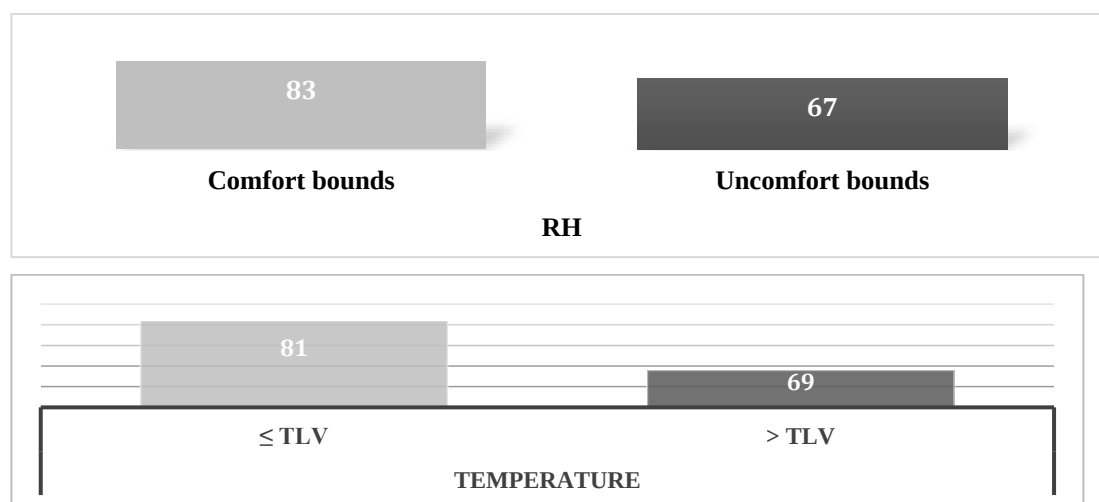


	≤ TLV	> TLV	Total
Thermal climate	134	0	134
	(100%)	(0%)	(100%)

Source: Primary Data, 2025

Monitoring relative humidity (RH) and air movement data revealed that 83 of 150 IAQ measurement sets (55.3%) showed RH values exceeding recommended comfort bounds, and 81 of 150 (54.0%) showed temperatures that, while below the WBGT TLV, suggested suboptimal indoor thermal comfort. This warrants attention for its effects on perceived comfort and long-term wellbeing, even absent acute heat strain risk.

Table 5. Proportion of Relative Humidity (RH) and Temperature



	Comfort bounds	Uncomfort bounds	Total
RH	83 (55.3%)	67 (44.7%)	150 (100%)

	≤ TLV	> TLV	Total
Temperature	81 (54%)	69 (46%)	150 (100%)

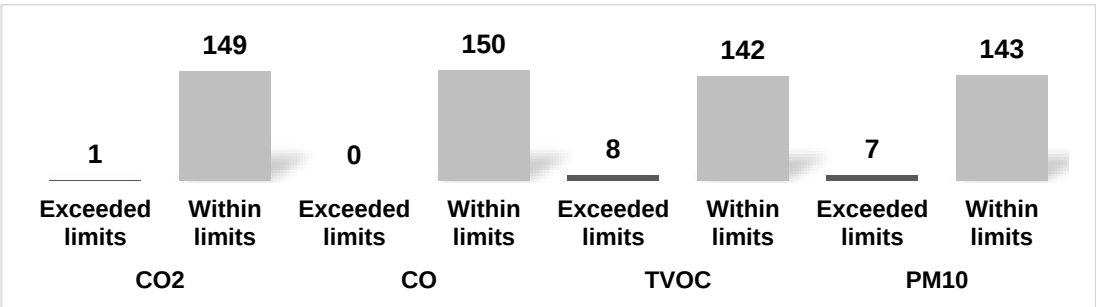
Source: Primary Data, 2025

Indoor Air Quality

Indoor air quality measurements targeted CO₂, CO, TVOC, and PM₁₀ at 150 measurement sets. The results were largely within permissible limits: CO₂ exceeded limits at only 1 location

(0.7%), and CO was fully within limits at all 150 points (0% exceedance). However, TVOC exceeded limits at 8 locations (5.3%) and PM₁₀ at 7 locations (4.7%).

Table 6. Proportion of Indoor Air Quality Elements



	Exceeded limits		Within limits	Total
CO ₂	1 (0.7%)		149 (99.3%)	150 (100%)
CO	0 (0%)		150 (100%)	150 (100%)
TVOC	8 (5.3%)		142 (94.7%)	150 (100%)
PM ₁₀	7 (44.7%)		143 (55.3%)	150 (100%)

Source: Primary Data, 2025

**Occupational Health Indicators:
Hemoglobin and Blood Pressure**

Individual health examinations were proceeded for 891 civil servant (Hb test) and 871 civil servants (blood

pressure test). The Hb test revealed that 525 civil servants (58.9%) had normal Hb levels, 242 (27.2%) had low Hb, and 124 (13.9%) had high Hb. The blood pressure findings are concerning. Of

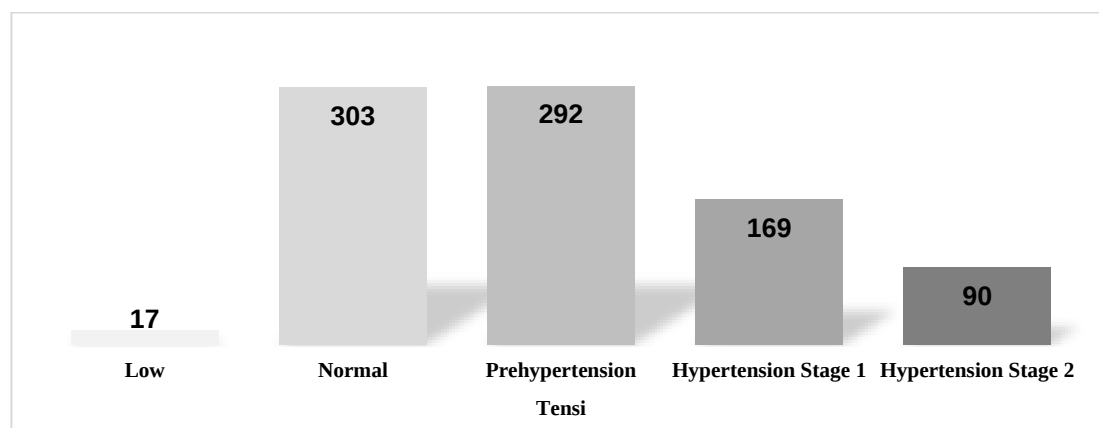
871 civil servants examined, only 297 (34.8%) had normal blood pressure. The remaining 573 (65.9%) found above the categories' level: 17 (2.0%) had low blood pressure, 292 (33.5%) were classified as prehypertensive, 169 (19.4%) as hypertension stage 1, and 90 (10.3%) as hypertension stage 2. Combining prehypertension and all hypertension categories, 551 civil servant (63.3%) showed blood pressure above normal.

Table 7. Proportion of Hb and Blood Pressure Test



	Low	Normal	High	Total
Hemoglobin	242 (27.2%)	525 (58.9%)	124 (13.9%)	891 (100%)

Source: Primary Data, 2025



Tension	Low	Normal	Prehypertension	Hypertension Stage 1	Hypertension Stage 2	Total
	17 (2.0%)	297 (34.8%)	292 (33.5%)	169 (19.4%)	90 (10.3%)	871 (100%)

Source: Primary Data, 2025

Table 7 presents blood pressure as row percentages, so the readings within each age group add up to 100%. In the youngest group (19 to 34 years), most respondents fell in the healthier range: 15.27% were normal and 12.51% were pre-hypertension, while 3.67% had Stage 1 and 1.15% had Stage 2 hypertension. In the 35 to 46 group the normal share dropped to 11.37%, and Stage 1 and Stage 2 hypertension together climbed to about 8.96% (5.63% and 3.33%). The oldest group (47 to 62 years) had the smallest normal share (8.15%) and the heaviest

hypertension burden, with 10.10% at Stage 1 and 5.86% at Stage 2, so close to half of this group (15.96%) had hypertension of some stage. Hypotension stayed rare across all ages and thinned out with age, from 1.15% in the youngest group to 1.15% in the oldest. For the whole sample, 34.79% were normal, 33.52% pre-hypertension, 19.40% Stage 1, and 10.33% Stage 2. The share with Stage 1 or Stage 2 hypertension more than triples from the youngest group (4.82%) to the oldest (15.96%).

Table 8. Distribution of Blood Pressure Classification by Age Group (Row Percentages), n = 871

Age	Low	Normal	Pre-hypertension	Stage 1 hypertension	Stage 2 hypertension
19–34 (n=294)	1.15	15.27	12.51	3.67	1.15
35–46 (n=279)	0.69	11.37	11.02	5.63	3.33
47–62 (n=298)	0.11	8.15	9.99	10.10	5.86
Total (n=871)	1.95	34.79	33.52	19.40	10.33

Source: Primary Data, 2025

DISCUSSION

Noise

This finding that all noise measurement points were below the TLV is consistent with the office-based nature of most tested agencies. The main noise

sources in these settings include human conversation, electronic equipment (computers, printers), and HVAC systems rather than heavy machinery or industrial processes. The absence of excessive noise exposure across all

agencies indicates that noise does not constitute a priority occupational health risk in the current sample of West Java provincial government offices.

This result aligns with prior studies in similar administrative environments. Research on noise in Indonesian public offices has generally confirmed that ambient office noise in government settings tends to remain within acceptable ranges, particularly where HVAC systems are the predominant noise source (Yuliandi and Ahman, 2019). The consistent compliance also suggests that agencies benefit from natural acoustic reduction through standard building construction without requiring specific noise engineering controls. However, the absence of noise exceeding the TLV should not preclude attention to lower-level noise nuisance (below 85 dBA) that may still contribute to cognitive load, distraction, and workplace stress, effects recognized in the literature even at sub-TLV levels (Alhajaji et al., 2025).

Workplace Illumination

The high proportion of illumination non-compliance indicates a significant

health concern. The finding that 70.9% of measurement points failed to meet the minimum regulatory standard suggest that inadequate lighting is widespread across the sampled offices. Mulya et al. (2025) study revealed average illumination of 145.7 lux in a private-sector transportation company office in Indonesia. They found that all points measured well below the 300-lux standard. This finding consistent with the notion that inadequate workplace lighting is a widespread problem across both public and private sector workplaces. Another study conducted by Widhia et al. (2024) reported that in a manufacturing context, 48.87% of illumination measurement points failed the applicable standard. The finding from this study (70.9% non-compliance), which is notably higher proportion of incompliance. This condition reflecting the age of government office buildings, inadequate maintenance of lighting fixtures, design constraints in existing structures, or insufficient planning in fixing lighting systems.

The health implications as a consequence of sustained sub-standard

illumination are well-documented. At the individual level, inadequate lighting has been related to visual fatigue (asthenopia), headache, neck-shoulder musculoskeletal strain complaints due to awkward postures, and decreased work accuracy (Jung et al., 2024; Wijanarko et al., 2024). Jung et al. (2024) research employed a multidimensional approach by combining cognitive performance tests and psychophysiological measurements. Poor workplace illumination may have broader implications beyond visual discomfort. Inadequate lighting conditions can contribute to visual strain, fatigue, and physiological stress, which may indirectly affect cognitive efficiency, work accuracy, and overall productivity. At the organizational level, these potential effects may be reflected in reduced work performance, increased error rates in administrative tasks such as document processing and data entry, and greater risk of health-related absenteeism. For civil servants, poor illumination may therefore have implications for the quality and efficiency of public administration

services. For civil servants specifically, the consequences affect the quality of public administration.

From a regulatory perspective, the 300-lux standard for office work based on MR No. 5/2018 sits on the conservative end compared by international standard. For instance, the Illuminating Engineering Society (IES) and European standards recommend 500 lux for sustained screen-based work and 750–1000 lux for fine-detail tasks. The low level of compliance with the relatively modest 300-lux threshold highlights the seriousness of the problem. Remediation efforts should prioritize the following: (1) replacing failing or obsolete fluorescent by changing with LED that deliver higher lumens and lower wattage; (2) redesigning task lighting at individual workstations optimize lumen distribution; (3) optimizing natural daylighting through window-management; and (4) establishing a routine illumination maintenance and inspection schedule for all government office buildings.

Thermal Climate

The finding that all thermal stress

measurement complied with the regulatory standard suggest that most office areas were generally protected from heat stress. Qualitative observations from the testing program flagged that server rooms, storage areas, and archives within some agencies lacked adequate mechanical ventilation or dedicated HVAC servicing. These spaces are often excluded from centralized AC coverage, creating thermal micro environments that can exceed comfort thresholds and, in server rooms specifically, create conditions that simultaneously stress electronic equipment and any personnel working therein for extended periods. Thermal monitoring should not be limited to primary office spaces but extended to all occupied auxiliary areas.

The finding of universal WBGT compliance in the primary office spaces is consistent with the general cooling adequacy reported in Indonesian government office studies (Widhia et al., 2024). Nonetheless, the prevailing approach of relying entirely on centralized AC systems creates vulnerabilities: power outages or AC

failures during hot-season periods can rapidly elevate ambient temperatures in sealed, poorly ventilated buildings.

Indoor Air Quality

These findings suggest that ventilation is generally sufficient to dilute combustion-related indoor pollutants across the tested agencies. The sources of exceeding TLV of the TVOC in office environments typically include new or ageing furniture, flooring adhesives, cleaning products, chemical based air freshener and office equipment such as printers and photocopiers. While the high level of PM10 could be dissipated from with inadequate filtration in HVAC systems, resuspension of settled dust, or proximity to outdoor air pollution sources in urban areas.

As shown in Table 5, TVOC and PM10 levels exceeded the regulatory limits at a small number of measured locations. This finding is important because exposure to indoor air pollutants can have chronic health effects. Elevated TVOC concentrations have been linked to irritation of the upper-respiratory membranes, headache, and fatigue, and at higher concentrations to central

nervous system effects (MR No. 5/2018; WHO Guidelines for Indoor Air Quality, 2010). Indoor PM10 usually consists of fine particles from aging office equipment and infiltration from outdoor air, and with long-term exposure these particles can contribute to respiratory irritation, allergic conditions, and cardiovascular risk. Relative humidity is another key IAQ parameter; here it measured 55.3%, above the recommended range, while temperature was elevated in 54.0% of the sets. Together, the exceedances in TVOC and PM10 suggest that HVAC maintenance may be deficient in certain areas of the building, which should be prioritized.

Hemoglobin and Blood Pressure

The proportion with low hemoglobin (27.2%) is notable. Low hemoglobin reflects iron-deficiency anemia, particularly among female civil servant, though sex-stratified data were not available in this dataset. Low Hb test is relevant to workplace performance as it reduces oxygen-carrying capability. This condition may worsen to fatigue level, decreased cognitive performance, and reduced tolerance to physical

demands. The overall combining effects can result in lower productivity. The blood pressure findings are more concerning. The proportion of civil servants with above-normal blood pressure is significantly higher than national population estimates. The Indonesian Basic Health Research (Riskesdas) has reported hypertension prevalence of approximately 34.1% in adults aged 18 years and above (Kemenkes RI, 2018). The increased prevalence in these civil servants sampled may reflect selection factors (an older workforce, male-predominant samples in certain agencies), unmeasured confounders (dietary habits, physical activity levels, chronic disease history), and possibly occupational stressors associated with desk-bound government work. The high prevalence of prehypertension and hypertension in the civil servant sample is consistent with broader trends in Indonesian adults. The Indonesian Health Survey 2023 confirmed that hypertension has become the most prevalent non-communicable disease in Indonesia, with adult prevalence above 30% nationally (BKPK Kemenkes,

2024). The significant contribution of occupational stressors, including poor work environment quality, to high blood pressure should not be overlooked. These findings should be interpreted with caution. This study was designed as a field-based occupational health baseline, not as a causal study. Therefore, the results cannot prove that workplace environmental conditions directly caused cardiometabolic risk among the civil servants. Environmental measurements may vary by room, time of measurement, building condition, work activity, and equipment use. Individual health indicators may also be influenced by age, sex, lifestyle, medication use, previous disease, and other non-occupational factors.

The generalizability of this study is also limited. The findings are most relevant to office-based civil servants working in similar government settings. They should not be directly generalized to field workers, shift workers, industrial workers, or private-sector employees with different work environments and job characteristics.

Despite these limitations, the findings

are still useful for occupational health planning. They support the need to combine workplace environmental improvement with individual cardiometabolic screening in civil servant health programs. This approach is consistent with occupational health surveillance principles, which emphasize prevention through both worker health monitoring and safe working environments (ILO, 1998). It is also aligned with the Total Worker Health approach, which integrates protection from workplace hazards with broader health promotion efforts. In Indonesia, this approach is relevant to the regulation on occupational safety and health in the work environment and to the national screening framework for non-communicable diseases, including obesity, hypertension, diabetes mellitus, stroke, and heart disease.

Future studies should include repeated environmental measurements, broader geographic coverage, and follow-up health data. This would help determine whether workplace improvements are associated with better long-term health outcomes among civil servants.

Policy Implications and Recommendations

The findings of this study suggest direct implications for OSH policy in the Indonesian public sector. First, workplace illumination must be recognized as a priority public health problem in government offices, not merely a facilities management matter. The 70.9% non-compliance rate at the measurement-point level represents a systemic failure that cannot be addressed by minor adjustments to existing systems. A coordinated infrastructure investment program targeting LED lighting upgrades in all provincial government buildings is very important, prioritizing the 22 agencies where zero points met the standard.

Second, the multi-agency testing should become a routine program for early detection of health impairment and for effective occupational health surveillance mechanism. By pooling resources through a central coordinating body relevant OSH Center, the program can be generated comprehensive comparative data across 80 agencies at a scale that individual

agency-level. This model should be institutionalized, and testing results formally integrated into agency governance performance indicators.

Third, the high burden of prehypertension and hypertension (63.9%) among examined civil servant for routine follow-up health management programs, including dietary counseling, physical activity promotion, and stress management interventions tailored to the office worker population. Integration of environmental improvement (particularly lighting and thermal comfort) with health promotion activities for civil servants is recommended, given the documented links between poor work environment and cardiometabolic risk.

These findings provide practical evidence for government agency managers to prioritize improvements in workplace lighting and indoor environmental quality, strengthen routine occupational health surveillance, and integrate environmental monitoring with workplace health promotion programs. Such measures may contribute to

healthier, safer, and more productive public sector workplaces.

This study has several limitations. First, the analysis relied on finalized official occupational health testing reports, and the original individual-level continuous measurement data were not available. Consequently, descriptive statistics such as means and standard deviations could not be calculated, and the analysis was limited to the summarized compliance data provided in the official reports. Nevertheless, the study provides a comprehensive overview of occupational health and physical work environment conditions across 80 provincial government agencies using standardized official assessment data.

CONCLUSION

This study mapped the physical work environment conditions of 80 West Java Provincial Government Agencies using occupational health testing data from Bandung OSH Center program. Noise levels at all 90 measurement points (100%) were well below the TLV, and thermal climate at all 134 measurement points (100%) was within acceptable limits, reflecting the

adequacy of HVAC systems in primary office spaces. By contrast, workplace illumination was severely non-compliant: only 153 of 525 measurement points (29.1%) met the minimum standard of 300 lux, with 70.9% of points below standard and 22 agencies (27.5%) recording no compliant measurement points at all. Indoor air quality was generally adequate, with minor TVOC exceedances (5.3%) and PM10 exceedances (4.7%) in a subset of locations. Individual health examinations revealed that 63.9% of 870 civil servant had blood pressure in the prehypertensive or hypertensive range, and 27.2% of 891 civil servant had below-normal Hb levels. These findings establish workplace illumination as the dominant and most urgent physical environmental hazard in West Java provincial government offices. The multi-agency comprehensive testing program model implemented by West Java Provincial Manpower and Transmigration Social Services Office through Bandung OSH Center represents a replicable and effective model for public sector

occupational health surveillance.

Immediate action is recommended on LED lighting retrofits, illumination redesign for non-compliant spaces, periodic environmental monitoring for auxiliary spaces (server rooms, storage), and integration of environmental improvements with cardiometabolic health programs for civil servant.

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