

Custodia: Journal of Legal, Political, and Humanistic Inquiry
Vol 2 No 1 September 2026, Hal 477-492
ISSN: 3123-2116 (Print) ISSN: 3123-2108 (Electronic)
Open Access: https://scriptaintelektual.com/custodia

Legal Protection for Scrap Collectors Exposed to Medical Waste Due to Illegal Disposal

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Article Info :
Received:
15-09-2026
Revised:
15-10-2026
Accepted:
20-10-2026

Abstract

Illegal disposal of medical waste exposes informal scrap collectors to hazardous materials while raising questions about the accessibility of environmental rights and remedies in Indonesia. This study examines preventive legal protection, criminal, civil, and administrative liability, and access to justice for scrap collectors affected by unlawful medical waste disposal. A normative juridical approach with descriptive legal analysis was applied to constitutional provisions, Law Number 32 of 2009 concerning Environmental Protection and Management, Minister of Health Regulation Number 3 of 2026, and legal scholarship. Documentary materials were examined through qualitative selection, presentation, and legal interpretation. The analysis identifies constitutional environmental and health guarantees alongside statutory duties governing hazardous waste management and prohibiting unauthorized dumping. However, the examined provisions do not expressly establish occupation-specific safeguards for informal collectors. Criminal and administrative mechanisms address offenses, compliance, and restoration, whereas civil remedies permit compensation when applicable legal requirements are met. Article 88 retains strict liability within its statutory scope without eliminating proof of loss and causation. Difficulties tracing waste origins, identifying responsible actors, documenting exposure, and pursuing claims may constrain protection. Stronger reporting procedures, waste traceability, institutional coordination, and accessible remedies are needed to connect regulatory duties with meaningful protection for exposed scrap collectors.

Keywords: *Illegal Disposal, Legal Liability, Legal Protection, Medical Waste, Scrap Collectors.*



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INTRODUCTION

Illegal disposal of medical waste creates a legal problem that extends beyond environmental noncompliance because individuals who neither generate nor control hazardous materials may bear their health consequences. Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia recognizes the right to a good and healthy environment and access to healthcare, establishing a constitutional foundation for protecting individuals exposed to environmental hazards. The occupational and public-health risks arising throughout the generation, storage, treatment, and disposal of healthcare waste have been examined as interconnected stages of hazardous exposure (Cook et al., 2023). Evidence synthesized from studies of medical-waste health impacts further identifies exposure as a matter of community protection rather than a concern confined to healthcare facilities (Aulia & Zakianis, 2026). Scrap collectors face particular vulnerabilities when discarded medical materials enter informal waste-recovery activities without appropriate segregation, identification, or protective arrangements. Research on informal waste pickers has examined occupational safety practices and the conditions influencing their protection during waste-recovery activities (Akyen et al., 2025). Indonesian healthcare-waste scholarship has likewise connected waste-management technology with environmental performance and occupational safety, indicating that technical compliance and protection against hazardous exposure constitute interrelated responsibilities (Tseng et al., 2022).

Existing legal scholarship on medical-waste governance has predominantly examined regulatory compliance, hazardous-waste management obligations, institutional accountability, and environmental protection mechanisms. Legal examination of healthcare waste management has emphasized the relationship between facility-level obligations and the protection of environmental health against potentially hazardous medical materials (Nurhayati & Racha, 2024). Research

specifically addressing primary healthcare clinics identifies legal responsibility for medical-waste management as a component of institutional accountability within the healthcare sector (Dwitasari et al., 2025). Analysis based on Law Number 17 of 2023 concerning Health extends attention to hospital waste-management responsibilities within Indonesia's evolving health-law framework (Sembiring & Pratiwi, 2024). The regulatory dimensions of hazardous-waste management have also been examined through the legal framework governing hazardous substances, waste handling, and associated implementation challenges (Setiadi & Rosnawati, 2024). These contributions establish a substantial foundation for understanding the obligations of waste generators and managers, but they address the legal position of exposed third parties less directly than the regulatory responsibilities of institutions handling hazardous materials.

A specific research gap emerges in the relationship between legal responsibility for unlawful medical-waste disposal and the enforceable protection available to scrap collectors who encounter hazardous materials outside healthcare facilities. Legal analysis of hospital criminal liability for illegal medical-waste disposal has emphasized institutional responsibility and the relevance of environmental liability principles to unlawful waste-management practices (Adi, 2025). Research proposing reforms to Indonesia's waste-management framework identifies wider regulatory and governance challenges affecting the organization and implementation of waste-management responsibilities (Listiningrum et al., 2023). Occupational safety investigations involving informal waste pickers address exposure-related vulnerabilities and protective practices, but their principal analytical emphasis differs from determining the legal remedies available to individuals harmed by unlawful disposal (Akyen et al., 2025). Public-health assessments of medical-waste management identify occupational and community exposure pathways without independently resolving the requirements for legal accountability, compensation, or victim protection within particular national jurisdictions (Cook et al., 2023). The unresolved issue concerns how these separate bodies of knowledge can be integrated to determine the relationship between statutory duties, unlawful conduct, causation, institutional responsibility, and legal remedies for scrap collectors. This gap reflects the need for a more coherent interpretation and application of existing protective legal instruments rather than establishing that Indonesian law contains no general mechanisms for addressing environmental harm or personal injury.

The practical consequences of this legal fragmentation become significant when scrap collectors experience potential exposure to infectious or hazardous medical materials without clear access to preventive safeguards and subsequent remedial mechanisms. Health-oriented research concerning medical-waste exposure demonstrates the relevance of examining adverse health consequences when evaluating the adequacy of protective arrangements for individuals encountering improperly managed waste (Aulia & Zakianis, 2026). Studies of sustainable healthcare-waste management in Indonesia connect occupational safety with waste-management performance, supporting the examination of whether preventive responsibilities adequately address individuals working outside formal healthcare institutions (Tseng et al., 2022). Legal investigations concerning medical-waste management emphasize that institutional obligations extend to environmental-health protection, making the prevention of hazardous exposure a substantive component of responsible waste governance (Nurhayati & Racha, 2024). Research examining hazardous-waste regulation further demonstrates the significance of legal implementation issues when waste-management obligations are not effectively translated into accountable operational practices (Setiadi & Rosnawati, 2024). Without an integrated interpretation of preventive duties and remedial protections, legal enforcement may focus on regulatory violations and institutional sanctions while insufficiently examining the procedural position, evidentiary difficulties, and potential entitlement to remedies of affected scrap collectors.

The present research positions scrap collectors as potential rights holders and injured third parties within the legal relationship arising from unauthorized medical-waste disposal, rather than treating them exclusively as informal workers exposed to occupational hazards. Existing examinations of criminal liability concerning illegal hospital waste disposal provide a foundation for assessing unlawful conduct, while the present inquiry extends attention toward the legal consequences experienced by individuals exposed to improperly discarded materials (Adi, 2025). The legal responsibilities of primary healthcare clinics offer an institutional starting point for examining whether obligations concerning medical-waste handling, transfer, and management can be connected to potential harm occurring beyond the originating facility (Dwitasari et al., 2025). Scholarship proposing reforms to Indonesian waste governance provides an additional basis for assessing fragmentation in regulatory

responsibilities, institutional coordination, and mechanisms for ensuring compliance (Listiningrum et al., 2023). Health-sector legal analysis concerning hospital waste management also contributes to examining the relationship between healthcare responsibilities and the broader environmental obligations associated with hazardous medical materials (Sembiring & Pratiwi, 2024). The proposed novelty lies in integrating preventive legal protection, responsibility for illegal disposal, and post-exposure remedial protection within a single victim-centered assessment of scrap collectors as individuals potentially entitled to legal safeguards and remedies. This analytical position distinguishes the existence of regulatory duties from their practical capacity to establish accountability and address alleged losses, without presuming that exposure alone automatically proves legal liability or entitlement to compensation.

This research examines the legal protection available to scrap collectors exposed to medical waste as a consequence of illegal disposal under the Indonesian legal framework. The investigation seeks to identify preventive legal obligations governing hazardous medical-waste management and the responsibilities of healthcare facilities, waste-management actors, and relevant supervisory authorities. It also analyzes potential grounds for legal accountability when unlawful disposal results in alleged health-related or environmental harm to individuals engaged in informal waste collection. Particular attention is directed toward the relationship between violations of waste-management obligations, proof of exposure and injury, attribution of responsibility, and available mechanisms for obtaining legal remedies. The intended scholarly contribution is a structured interpretation of how environmental law, healthcare regulation, and principles of legal protection intersect in addressing the position of scrap collectors as potentially affected third parties. The practical contribution concerns the identification of legal considerations relevant to strengthening preventive safeguards, institutional accountability, access to remedies, and the protection of vulnerable individuals against the consequences of illegal medical-waste disposal.

RESEARCH METHODS

This research employed a normative juridical approach supported by descriptive legal analysis to examine the protection available to scrap collectors exposed to medical waste resulting from illegal disposal. The investigation relied exclusively on secondary data obtained through documentary legal research, without conducting interviews, field observations, surveys, or direct measurements of hazardous-waste exposure. Primary legal materials consisted of the 1945 Constitution of the Republic of Indonesia, Law Number 32 of 2009 concerning Environmental Protection and Management, relevant government and ministerial regulations, and judicial decisions concerning environmental protection and hazardous-waste management. Secondary legal materials comprised scholarly journal articles and legal textbooks addressing environmental liability, institutional obligations, and the legal consequences of unauthorized medical-waste disposal, including the examination of hospital criminal responsibility under Indonesian environmental law (Adi, 2025). Tertiary legal materials included legal dictionaries used to clarify legal terminology and support the interpretation of relevant concepts and statutory provisions. The documentary materials were obtained from the Directory of Decisions of the Supreme Court of Indonesia, Google Scholar, and institutional repositories of Indonesian universities. The selection of legal materials emphasized their relevance to hazardous-waste management obligations, environmental-health protection, unlawful disposal, and the legal position of exposed individuals, consistent with regulatory issues identified in Indonesian hazardous-waste governance (Setiadi & Rosnawati, 2024).

Data were analyzed qualitatively through three sequential stages consisting of data reduction, data presentation, and conclusion drawing. During data reduction, the collected legal materials were selected and organized according to their relevance to preventive legal protection, obligations concerning medical-waste management, prohibited disposal practices, legal accountability, and potential remedies available to affected scrap collectors. The data presentation stage involved systematically arranging constitutional provisions, statutory regulations, subordinate legal instruments, judicial decisions, and relevant scholarly interpretations to identify relationships between regulatory obligations and the protection of individuals exposed to hazardous medical waste. Legal interpretation distinguished binding legal provisions from factual circumstances described in documentary sources, allowing the analysis to examine potential violations without treating secondary accounts as independently verified evidence of particular incidents or injuries. The examination of institutional

responsibility considered the legal obligations of healthcare facilities in managing medical waste and the implications of noncompliance for environmental and public-health protection (Dwitasari et al., 2025). Conclusion drawing involved interpreting the relationship between preventive safeguards, responsibility for unlawful disposal, and remedial protection while evaluating regulatory coherence and institutional challenges associated with waste-management governance (Listiningrum et al., 2023). The resulting legal conclusions were confined to the documentary materials examined and directed toward answering the research questions concerning available legal protections and potential liability for harm suffered by scrap collectors, without making empirical claims requiring independent field verification.

RESULTS AND DISCUSSION

Preventive Legal Protection for Scrap Collectors against Exposure to Illegally Disposed Medical Waste

Preventive legal protection for scrap collectors exposed to illegally disposed medical waste must be examined through the relationship between constitutional environmental rights, statutory waste-management obligations, and the institutional responsibility to prevent hazardous exposure. Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia recognizes the right of every person to a good and healthy environment and access to healthcare services, establishing the constitutional foundation for protection against environmental hazards. This guarantee extends to scrap collectors regardless of their informal occupational status, although their position outside regulated healthcare and waste-management institutions creates particular difficulties in accessing preventive safeguards. Hadjon (1987) distinguishes preventive legal protection from repressive protection by emphasizing the function of legal arrangements that prevent violations before protected interests are impaired. Rahardjo (2006) further conceptualizes law as an instrument serving human interests, providing a doctrinal basis for examining whether formally recognized rights adequately address the circumstances of socially vulnerable populations. The principal legal issue concerns the extent to which constitutional protection is translated into enforceable obligations capable of preventing hazardous medical waste from entering locations where informal collection activities occur.

Article 65 paragraph (1) of Law Number 32 of 2009 concerning Environmental Protection and Management expressly recognizes the right of every person to a good and healthy environment as an integral component of human rights. Article 65 paragraph (2) further establishes rights concerning environmental education, access to information, public participation, and access to justice in matters affecting environmental quality. Under Article 65 paragraph (5), individuals may submit complaints concerning suspected environmental pollution or destruction, providing a procedural mechanism for reporting potentially unlawful medical-waste disposal. The formulation of these provisions does not condition the enjoyment of environmental rights upon formal employment, occupational registration, or contractual relationships with institutions generating hazardous waste. Scrap collectors consequently possess a legal basis for seeking environmental information and reporting suspected violations, although these rights do not automatically establish specialized occupational safeguards. Research examining occupational health and safety practices among informal waste pickers identifies the relevance of workplace conditions and protective arrangements in understanding the vulnerabilities associated with informal waste-recovery activities (Akyen et al., 2025). The discrepancy between universal environmental rights and the absence of expressly differentiated safeguards raises a question concerning the substantive adequacy of preventive protection for individuals who encounter hazardous materials outside regulated waste-management operations.

Exposure to improperly managed medical waste presents a distinctive environmental-health concern because infectious materials, contaminated sharp objects, and hazardous chemical residues may remain accessible after disposal outside authorized management channels. Cook et al. (2023) examine occupational and public-health risks throughout healthcare-waste generation, storage, treatment, and disposal, demonstrating the importance of evaluating exposure pathways beyond the healthcare facility itself. Aulia and Zakianis (2026) synthesize research concerning the health consequences of medical-waste exposure, providing additional support for treating improperly managed medical materials as a potential source of infectious and physical hazards. These risks are especially relevant to scrap collectors whose economic activities may involve sorting unidentified materials without reliable information concerning their origin or hazardous characteristics. Research on sustainable waste management in Indonesia's healthcare sector also connects waste-management performance with

environmental impacts and occupational safety, indicating that technical compliance contributes to the prevention of exposure-related risks (Tseng et al., 2022). From a legal standpoint, the significance of these findings lies in the obligation to control hazardous materials at their source and throughout the management chain rather than transferring responsibility for exposure prevention to individuals who encounter waste after unauthorized disposal.

The statutory foundation for controlling hazardous medical waste is established through Article 59 paragraph (1) of Law Number 32 of 2009, which requires every person generating hazardous and toxic waste to manage the waste produced. Article 59 paragraph (3) further regulates the transfer of hazardous-waste management to another party when the generator cannot independently undertake the required management activities. Article 60 prohibits dumping waste or other materials into environmental media without the legally required authorization, distinguishing controlled disposal from unlawful release into the environment. Minister of Health Regulation Number 3 of 2026 concerning Disease Control develops the preventive-health dimension through Article 61 paragraph (1), which addresses measures intended to prevent environmental contamination from waste and radiation that may cause health disturbances. Article 61 paragraph (5) identifies observation, laboratory examination, risk analysis, follow-up recommendations, environmental engineering, and appropriate technological measures as components of environmental-health protection. Article 62 paragraph (1) separately establishes the stages of solid medical-waste management originating from healthcare facilities, covering reduction, segregation and containment, collection, transportation, storage, treatment, and final disposal. Legal scholarship examining hazardous-waste governance emphasizes the importance of regulatory coherence and implementation in determining whether statutory management obligations can function as effective environmental safeguards (Setiadi & Rosnawati, 2024).

Table 1. Preventive Legal Protection for Scrap Collectors under Indonesian Environmental and Health Regulations

Legal Instrument	Relevant Provision	Legal Protection	Implications for Scrap Collectors
1945 Constitution of the Republic of Indonesia	Article 28H paragraph (1)	Recognition of the right to health services and a good and healthy environment	Establishes constitutional protection against environmental conditions that threaten health
Law Number 32 of 2009 concerning Environmental Protection and Management	Article 65 paragraphs (1), (2), and (5)	Environmental rights, access to information, public participation, access to justice, and environmental complaints	Provides a legal basis for obtaining environmental information and reporting suspected medical-waste pollution
Law Number 32 of 2009 concerning Environmental Protection and Management	Article 59 paragraphs (1) and (3)	Obligations concerning hazardous-waste management and its transfer to another party	Supports the control of hazardous medical materials before they reach informal waste-recovery locations
Law Number 32 of 2009 concerning Environmental Protection and Management	Article 60	Prohibition of unauthorized dumping into environmental media	Establishes preventive restrictions against uncontrolled medical-waste disposal
Minister of Health Regulation Number 3 of 2026 concerning Disease Control	Article 61 paragraphs (1), (5), (6), (7), and (8)	Prevention of environmental contamination, risk analysis, supervision, and environmental-health surveillance	Supports monitoring and evaluation of potential exposure pathways affecting surrounding communities

Minister of Health Regulation Number 3 of 2026 concerning Disease Control	Article 62 paragraphs (1), (9), and (10)	Regulated management stages and cooperation with other parties in medical-waste management	Supports controlled handling and transfer of medical waste originating from healthcare facilities
Minister of Health Regulation Number 3 of 2026 concerning Disease Control	Article 63 paragraphs (1)–(7)	Management of medical waste originating from community activities	Establishes a separate management pathway for community-generated medical waste and reduces potential uncontrolled disposal

The normative mapping presented in Table 1 identifies three complementary dimensions of preventive protection consisting of constitutional guarantees, environmental-law obligations, and technical health-protection requirements. Constitutional provisions establish the legal position of individuals as rights holders, while Article 59 of Law Number 32 of 2009 assigns management obligations to parties generating hazardous waste. Minister of Health Regulation Number 3 of 2026 provides more specific measures concerning contamination prevention, environmental-health surveillance, and the management of medical waste produced by healthcare facilities. Article 63 of the ministerial regulation establishes a distinct management framework for medical waste originating from community activities, which must not be conflated with the obligations governing healthcare-generated waste unlawfully entering public disposal locations. Research concerning compliance with medical-waste management requirements in Indonesian healthcare facilities provides a basis for examining the relationship between regulatory obligations and their institutional implementation (Lelyana, 2024). The combined legal framework demonstrates that preventive safeguards are principally structured around the conduct of waste generators and regulated management actors, while the individual protection of scrap collectors operates through generally applicable environmental rights.

The effectiveness of these preventive obligations depends on the capacity of healthcare facilities and authorized waste-management operators to maintain control over hazardous materials throughout the legally prescribed management stages. Article 62 paragraph (9) of Minister of Health Regulation Number 3 of 2026 permits medical-waste management by technically qualified healthcare facilities or through cooperation with other parties in accordance with applicable legal requirements. Article 62 paragraph (10) identifies collection, transportation, treatment, and final disposal as stages in which cooperation with other parties may be undertaken. Such arrangements create separate operational responsibilities that require examination according to the legal obligations and conduct attributable to each participating institution. Research concerning the legal responsibility of primary healthcare clinics identifies medical-waste management as an institutional obligation requiring attention to regulatory compliance and environmental protection (Dwitasari et al., 2025). Legal analysis of medical-waste management in healthcare facilities also emphasizes the relationship between waste-handling obligations and the prevention of environmental-health risks (Nurhayati & Racha, 2024). Institutional compliance must consequently be evaluated through the conformity of waste-management practices with applicable requirements rather than through the existence of contractual cooperation alone.

A significant limitation emerges from the difference between universal environmental protection and legal provisions specifically addressing the circumstances of informal scrap collectors. The three legal instruments examined recognize environmental rights and establish hazardous-waste management responsibilities, but the cited provisions do not expressly designate scrap collectors as a separate vulnerable group requiring occupation-specific protective arrangements. This absence of explicit recognition does not eliminate their legal rights because constitutional guarantees and Article 65 of Law Number 32 of 2009 apply without restricting protection to formally employed individuals. It does, however, leave questions concerning targeted risk communication, access to exposure-related information, and protective responses for individuals who may encounter hazardous materials during informal waste recovery. Research on medical-waste management in Indonesian healthcare facilities identifies supervision, institutional capacity, and regulatory implementation as relevant concerns in evaluating the protection afforded by hazardous-waste governance (Widihastuti et al., 2026). The normative deficiency is more accurately characterized as the limited specification of safeguards for an

exposed occupational group than as the complete absence of environmental protection or legal accountability.

Preventive legal protection for scrap collectors requires interpretation of the applicable provisions according to their protective purposes rather than solely according to their administrative requirements. Article 28H paragraph (1) of the 1945 Constitution establishes the protected constitutional interest, while Article 65 of Law Number 32 of 2009 provides a statutory foundation for environmental rights and participation. Article 61 of Minister of Health Regulation Number 3 of 2026 supplies a complementary health-protection framework through environmental observation, risk analysis, supervision, and surveillance activities concerning contamination hazards. These regulatory functions can support identification of potential exposure conditions affecting scrap collectors, although the ministerial regulation does not expressly establish an individualized compensation mechanism for persons experiencing exposure. Research proposing legal reform of Indonesia's waste-management system identifies governance and regulatory coordination as matters requiring attention in the development of more coherent environmental management arrangements (Listiningrum et al., 2023). An occupation-sensitive interpretation would emphasize accessible environmental information, recognition of the circumstances of informal waste recovery, and effective implementation of existing supervision and contamination-prevention duties without attributing unexpressed legal requirements to the current regulations. The resulting legal assessment establishes that Indonesia possesses a substantive foundation for preventing hazardous medical-waste exposure, but the protection of scrap collectors remains predominantly indirect because the examined provisions concentrate on environmental rights and waste-management obligations rather than expressly tailored safeguards for this vulnerable population.

Criminal, Civil, and Administrative Liability for Illegal Medical Waste Disposal

Illegal disposal of medical waste creates several forms of legal responsibility because the prohibited conduct may violate environmental obligations, threaten public health, and cause losses to individuals who have no involvement in the generation or management of hazardous materials. Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia establishes a constitutional foundation for protecting individuals against environmental conditions that endanger health and undermine the enjoyment of a healthy environment. Law Number 32 of 2009 concerning Environmental Protection and Management provides the principal statutory framework for identifying criminal, civil, and administrative responsibility arising from violations of environmental obligations. Criminal responsibility addresses conduct satisfying the elements of environmental offenses, whereas civil liability concerns compensation for legally established losses attributable to responsible parties. Administrative accountability serves a different function by requiring compliance with environmental obligations and enabling regulatory intervention against activities that violate applicable requirements. The involvement of healthcare facilities, transportation operators, and medical-waste treatment providers creates legal relationships that must be examined individually rather than treating every institution connected to the waste-management chain as automatically liable. Adi (2025) examines hospital criminal responsibility for illegal medical-waste disposal, demonstrating the relevance of distinguishing institutional obligations from the legal requirements for attributing environmental offenses to particular actors.

Criminal liability for improperly managed hazardous medical waste may arise under Article 59 paragraph (1) of Law Number 32 of 2009, which requires every person generating hazardous and toxic waste to manage the waste produced. Article 103 establishes criminal sanctions for hazardous-waste generators who fail to undertake the management required under Article 59, providing a distinct legal basis from offenses involving unauthorized dumping. Article 60 prohibits dumping waste or other materials into environmental media without the legally required authorization, while Article 104 provides a maximum imprisonment of three years and a maximum fine of IDR 3 billion for violations of that prohibition. Articles 98 and 99 separately regulate intentional and negligent conduct resulting in environmental-quality exceedances or environmental damage satisfying the relevant statutory conditions, with additional consequences where the specified requirements concerning injury or danger to human health are established. The distinction between these provisions is legally significant because proof of unauthorized dumping does not independently establish every element required for criminal liability involving intentional or negligent environmental harm. Legal scholarship concerning the

regulation of hazardous medical waste in hospitals emphasizes the importance of examining waste-management obligations and their consequences under environmental legislation rather than equating every procedural irregularity with the same category of environmental offense (Sutanto & Karianga, 2023).

Criminal responsibility becomes more complex when unlawful medical-waste disposal involves a healthcare institution and a separate company responsible for collecting, transporting, or treating hazardous materials. Article 116 paragraph (1) of Law Number 32 of 2009 permits criminal charges and sanctions against a business entity and/or persons who order or lead environmental offenses committed by, for, or on behalf of that entity. Article 116 paragraph (2) further addresses offenses committed by individuals acting within the scope of their employment or other relationships with a business entity, allowing responsibility to be examined in relation to the persons directing the prohibited conduct. Article 117 provides for an additional one-third increase in the prescribed imprisonment and fine when criminal charges are directed against persons ordering or leading an offense under Article 116 paragraph (1) letter b. Article 119 also recognizes additional sanctions or measures against business entities, including confiscation of criminal proceeds, closure of business activities, correction of the consequences of an offense, and fulfillment of unlawfully neglected obligations. These provisions do not establish automatic criminal responsibility for every institutional manager because the relevant relationship with the offense and the applicable statutory elements must still be demonstrated through legally admissible evidence. Research addressing hospital waste-management obligations under Indonesia's health-law framework supports the distinction between general institutional responsibility and the specific legal consequences arising from violations attributable to particular organizational actors (Sembiring & Pratiwi, 2024).

The involvement of third-party waste-management operators requires particular attention because the lawful transfer of medical waste does not itself establish that subsequent handling, transportation, treatment, or disposal has complied with regulatory obligations. Article 62 paragraph (1) of Minister of Health Regulation Number 3 of 2026 concerning Disease Control identifies the regulated stages of solid medical-waste management, including reduction, segregation and containment, collection, transportation, storage, treatment, and final disposal. Article 62 paragraph (9) permits healthcare facilities meeting technical requirements to manage medical waste or cooperate with other parties in accordance with applicable legislation. Article 62 paragraph (10) specifies that such cooperation may involve the collection, transportation, treatment, and final disposal stages, while Article 59 paragraph (3) of Law Number 32 of 2009 provides for transfer of hazardous-waste management to another party when the generator cannot perform the management independently. Legal responsibility must consequently be determined by examining the statutory duties, contractual functions, actual conduct, and alleged violations attributable to each participant rather than presuming that outsourcing either eliminates or automatically creates liability for the waste generator. Dwitasari et al. (2025) examine the legal responsibilities of primary healthcare clinics in medical-waste management, providing a relevant institutional basis for analyzing compliance duties within arrangements involving healthcare providers and waste-management actors.

Table 2. Criminal, Civil, and Administrative Liability for Illegal Medical Waste Disposal under Indonesian Environmental and Health Regulations

Type of Liability	Legal Basis	Legal Consequences	Implications for Scrap Collectors
Criminal liability for improper hazardous-waste management	Articles 59(1) and 103 of Law Number 32 of 2009	Criminal sanctions for hazardous-waste generators who fail to undertake legally required waste management	Provides a basis for prosecuting legally established failures in hazardous medical-waste management
Criminal liability for unauthorized dumping	Articles 60 and 104 of Law Number 32 of 2009	Imprisonment for a maximum of three years and a fine of up to IDR 3 billion	Enables criminal proceedings against persons responsible for dumping waste without the required authorization

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Criminal liability for environmental harm	Articles 98 and 99 of Law Number 32 of 2009	Criminal sanctions for intentional or negligent conduct satisfying the statutory elements of environmental harm	Provides a potential basis for proceedings involving environmental harm and established consequences for human health
Corporate criminal liability	Articles 116, 117, and 119 of Law Number 32 of 2009	Criminal responsibility of business entities and relevant controlling persons, with additional sanctions or measures where applicable	Enables examination of institutional responsibility beyond the person physically disposing of medical waste
Civil liability for environmental losses	Article 87(1) of Law Number 32 of 2009	Compensation and/or specified remedial actions for legally established environmental losses	Provides a potential legal avenue for recovering losses attributable to unlawful environmental conduct
Strict liability	Article 88 of Law Number 32 of 2009, in its applicable formulation	Strict responsibility for losses within the statutory scope without requiring proof of fault	May support compensation claims where the relevant activity, loss, and causal relationship are established
Administrative liability	Articles 76 and 82A–82C of Law Number 32 of 2009, in their applicable formulation	Regulatory sanctions, including written warnings, government coercion, administrative fines, suspension, or revocation of business licensing where applicable	Supports intervention against violations and prevention of continued hazardous-waste exposure
Environmental restoration	Articles 78 and 82 of Law Number 32 of 2009	Continued responsibility for environmental recovery and legally authorized restoration measures	Provides a basis for addressing contaminated environmental conditions without automatically awarding individual compensation
Medical-waste management obligations	Articles 61 and 62 of Minister of Health Regulation Number 3 of 2026	Obligations concerning contamination prevention and regulated medical-waste management	Establishes technical and preventive duties relevant to identifying failures that may expose scrap collectors to hazardous materials

The legal classification presented in Table 2 demonstrates that environmental responsibility is differentiated according to the prohibited conduct, the protected legal interest, and the consequences authorized by the applicable statutory provisions. Article 87 paragraph (1) of Law Number 32 of 2009 requires responsible business or activity operators whose unlawful conduct causes environmental pollution or destruction resulting in losses to other persons or the environment to provide compensation and/or undertake specified remedial actions. This provision offers a potentially relevant legal basis for claims involving medical expenses, interrupted income, or other legally recognizable losses suffered by scrap collectors, provided the necessary elements are established. Article 88 establishes strict liability for losses arising from activities involving hazardous substances, hazardous-waste generation or management, or serious environmental threats within its statutory scope. Although the currently applicable formulation of Article 88 differs from its original wording, the statutory explanation continues to specify that fault need not be proven by the claimant as a condition of compensation under the strict-liability principle. The absence of a requirement to prove fault must be distinguished from the continuing need to establish legally relevant loss and a causal relationship between the defendant's activity and the alleged damage. Nurhayati and Racha (2024) examine the relationship between medical-waste management obligations and environmental-health protection, providing a basis for

evaluating how institutional noncompliance may give rise to legal consequences when the conditions for liability are satisfied.

Administrative liability constitutes a separate mechanism because its principal function concerns correcting regulatory violations, restoring environmental conditions, and preventing the continuation of activities inconsistent with legally established requirements. Article 76 paragraph (1) of Law Number 32 of 2009, in its applicable formulation, authorizes the central or regional government to impose administrative sanctions when supervision identifies violations of business licensing or governmental approval requirements. Articles 82A and 82B establish additional administrative enforcement provisions concerning specified violations associated with environmental authorizations and obligations, including circumstances requiring corrective measures. Article 82C recognizes administrative sanctions comprising written warnings, government coercion, administrative fines, suspension of business licensing, and revocation of business licensing within the applicable statutory conditions. Article 82 further provides authority for requiring environmental restoration and arranging restoration through another party at the expense of the responsible business or activity operator, while Article 78 confirms that administrative sanctions do not eliminate restoration and criminal responsibilities. Research concerning environmental-law enforcement in hospital wastewater management identifies institutional supervision and implementation challenges that are relevant to assessing whether administrative authority can operate effectively, although those findings cannot independently establish the enforcement conditions of every medical-waste disposal case (Hidayat & Kartini, 2024).

The coexistence of criminal, civil, and administrative responsibility does not establish that every available sanction directly compensates individuals who have experienced hazardous medical-waste exposure. Article 78 of Law Number 32 of 2009 expressly preserves the relationship between administrative sanctions, environmental restoration obligations, and criminal responsibility, indicating that regulatory intervention does not necessarily exhaust the legal consequences of unlawful conduct. Criminal fines are punitive sanctions rather than an automatic mechanism for transferring compensation to scrap collectors, while administrative measures primarily require compliance or correction of regulated environmental activities. Individual compensation consequently requires an applicable civil liability basis and evidence supporting the claimed loss, even where criminal proceedings or administrative enforcement have established separate violations. The identification of responsible parties may become particularly difficult when hazardous materials pass through several transportation or treatment stages before appearing at uncontrolled disposal locations. Research concerning medical-waste management compliance in Indonesian healthcare facilities identifies the relevance of institutional practices and adherence to waste-management obligations when assessing the effectiveness of environmental protection arrangements (Lelyana, 2024). The relationship between waste-management technology, environmental impacts, and occupational safety further demonstrates the importance of maintaining effective operational controls rather than relying exclusively on punitive responses after hazardous materials have entered locations accessible to informal waste collectors (Tseng et al., 2022).

The normative assessment establishes that Indonesian environmental law provides separate instruments for criminal punishment, civil compensation, administrative correction, and environmental restoration in response to unlawful medical-waste disposal. Criminal liability requires proof of the relevant statutory offense and attribution of the prohibited conduct to legally responsible individuals or institutions. Civil liability provides a potential mechanism for compensating exposed scrap collectors, but access to compensation remains dependent on establishing the applicable basis of responsibility, the existence of legally recognizable losses, and a sufficient causal connection with the defendant's activities. Administrative enforcement can address regulatory violations and require environmental restoration, although these measures do not independently determine the amount of individual compensation or establish entitlement to recovery for every person alleging exposure. Research proposing reforms to Indonesian waste governance identifies regulatory coordination and institutional accountability as relevant considerations in developing more coherent mechanisms for environmental management and legal compliance (Listiningrum et al., 2023). The principal legal implication is the need to connect enforceable waste-management obligations with traceable institutional responsibility and accessible victim-remedy procedures while preserving the distinct evidentiary and substantive requirements governing each form of liability.

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Legal Remedies, Access to Justice, and Institutional Challenges in Protecting Exposed Scrap Collectors

Legal remedies for scrap collectors exposed to illegally disposed medical waste must be examined through the relationship between constitutional rights, environmental justice, and the procedural requirements governing claims for environmental harm. Article 28D paragraph (1) of the 1945 Constitution of the Republic of Indonesia guarantees recognition, protection, and fair legal certainty, while Article 28H paragraph (1) establishes the right to health services and a good and healthy environment. These constitutional guarantees apply to individuals engaged in informal waste collection without requiring their participation in formal employment arrangements or contractual relationships with healthcare institutions. Article 65 paragraph (2) of Law Number 32 of 2009 concerning Environmental Protection and Management recognizes access to environmental information, participation, and justice, while paragraph (5) establishes the right to submit complaints concerning alleged environmental pollution or destruction. The legal position of scrap collectors must consequently be assessed not only through their potential exposure to hazardous materials but also through their capacity to exercise environmental rights and seek remedies when those rights are impaired. Rahardjo (2006) emphasizes the relationship between law and the protection of human interests, providing a doctrinal foundation for evaluating whether legal mechanisms remain accessible to individuals whose socioeconomic circumstances may restrict their participation in formal legal proceedings.

Environmental complaints constitute an initial legal mechanism through which scrap collectors may report suspected medical-waste disposal without first establishing every element required for criminal or civil liability. Article 65 paragraph (5) of Law Number 32 of 2009 recognizes the right to submit complaints concerning alleged pollution or environmental destruction, allowing competent authorities to examine reported circumstances through the applicable enforcement procedures. Article 66 provides protection for persons exercising their environmental rights, with its current authoritative interpretation extending protection against retaliatory legal proceedings to qualifying victims, complainants, witnesses, experts, and environmental activists involved in environmental protection or related legal processes. This protection must be distinguished from unrestricted immunity because the statutory safeguard concerns participation in legitimate environmental protection activities rather than conduct unrelated to the exercise of environmental rights. Scrap collectors who discover medical waste in uncontrolled disposal locations may possess information relevant to identifying suspected violations, although their observations must be assessed alongside documentary, technical, and other legally admissible evidence. The availability of environmental complaints does not independently establish that an individual has suffered compensable injury or that a particular healthcare facility is responsible for the discarded material. Research concerning institutional gaps in Indonesian medical-waste governance identifies regulatory coherence and public-health protection as connected issues, supporting the need to examine whether reporting mechanisms can facilitate coordination among institutions responsible for environmental and health protection (Khayru et al., 2024).

Civil compensation constitutes a separate remedial mechanism when exposure to unlawfully discarded medical waste results in losses that satisfy the applicable requirements for legal responsibility. Article 87 paragraph (1) of Law Number 32 of 2009 establishes the obligation to provide compensation and/or undertake specified actions where unlawful environmental pollution or destruction attributable to a business or activity operator causes losses to other persons or the environment. Article 88, in its applicable formulation, retains strict liability for losses arising from activities involving hazardous substances, hazardous-waste generation or management, or serious environmental threats within the scope established by law. The absence of a requirement to establish fault under the strict-liability principle does not eliminate the need to demonstrate legally recognizable losses and an adequate causal relationship between the responsible activity and the alleged injury. Cook et al. (2023) identify occupational and public-health risks associated with healthcare-waste management, providing a scientific basis for examining possible exposure pathways without independently establishing the cause of an individual claimant's medical condition. Aulia and Zakianis (2026) further synthesize evidence concerning the health consequences of medical-waste exposure, although findings from the broader literature must be distinguished from the individualized evidence required to substantiate compensation claims involving particular scrap collectors.

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Representative litigation offers a procedural mechanism for addressing environmental losses affecting multiple individuals when their claims satisfy the statutory conditions governing collective representation. Article 91 paragraph (1) of Law Number 32 of 2009 recognizes the right of communities to bring representative actions for losses arising from environmental pollution or destruction. Article 91 paragraph (2) requires similarity of facts or events, legal grounds, and types of claims between the representatives and the persons represented, preventing the collective mechanism from being applied solely because several individuals work in the same occupation. Scrap collectors exposed to medical waste originating from a common disposal incident may potentially satisfy these conditions, although differences in exposure circumstances, injuries, and claimed losses require separate consideration. Article 92 recognizes the standing of qualifying environmental organizations to pursue environmental protection through litigation, subject to the requirements and limitations prescribed by the provision. Claims brought by environmental organizations are restricted to specified actions, with monetary claims limited to actual costs or expenditures, distinguishing organizational standing from unrestricted representation of individual compensation claims. Listiningrum et al. (2023) examine structural weaknesses in Indonesian waste governance, providing a relevant basis for assessing the institutional and regulatory circumstances that may complicate the pursuit of collective environmental remedies.

Table 3. Legal Remedies and Access-to-Justice Mechanisms for Scrap Collectors Exposed to Illegal Medical Waste Disposal

Legal Remedy	Relevant Provision	Scope of Protection	Legal Requirements and Limitations
Constitutional protection	Articles 28D(1) and 28H(1) of the 1945 Constitution	Recognition of legal certainty, health protection, and the right to a healthy environment	Constitutional guarantees require implementation through applicable substantive and procedural mechanisms
Environmental complaints	Article 65(2) and (5) of Law Number 32 of 2009	Access to environmental information, participation, justice, and complaint mechanisms	Complaints concern suspected environmental pollution or destruction and must follow applicable procedures
Protection against retaliatory legal proceedings	Article 66 of Law Number 32 of 2009	Protection for qualifying individuals participating in environmental protection or related legal proceedings	Protection is limited to conduct falling within the provision's legally recognized scope
Civil compensation	Article 87(1) of Law Number 32 of 2009	Compensation and/or specified remedial actions for legally established environmental losses	Requires an applicable liability basis, recognizable loss, and causal relationship
Strict liability	Article 88 of Law Number 32 of 2009	Responsibility for qualifying environmental losses without requiring proof of fault	Claimants must still substantiate legally relevant loss and causation
Representative group litigation	Article 91(1) and (2) of Law Number 32 of 2009	Collective claims through qualifying representatives of affected persons	Requires similarity of facts or events, legal grounds, and types of claims
Environmental organizational litigation	Article 92 of Law Number 32 of 2009	Litigation by qualifying environmental organizations	Subject to statutory standing requirements and limitations on monetary claims
Environmental-health protection	Article 61 of Minister of Health Regulation Number 3 of 2026	Prevention of contamination, environmental	Primarily establishes preventive health-protection measures rather

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		observation, risk analysis, and supervision	than an individual compensation procedure
Medical-waste management safeguards	Articles 62 and 63 of Minister of Health Regulation Number 3 of 2026	Regulated management of medical waste originating from healthcare facilities and community activities	Establishes management obligations according to waste origin and applicable technical requirements

The normative classification in Table 3 demonstrates that the protection of exposed scrap collectors involves distinct legal mechanisms addressing environmental rights, complaints, liability, judicial remedies, and contamination prevention. Constitutional guarantees and Article 65 of Law Number 32 of 2009 establish the legal position of affected individuals as rights holders, whereas Articles 87 and 88 concern the substantive basis for compensation when the applicable liability requirements are fulfilled. Articles 91 and 92 provide different forms of collective legal participation, making it necessary to distinguish representative claims by affected individuals from litigation undertaken by qualifying environmental organizations. Article 66 adds a procedural safeguard against retaliatory legal proceedings for qualifying persons exercising environmental rights, but this protection does not independently establish financial compensation or medical recovery entitlements. Hadjon's (1987) distinction between preventive and repressive legal protection provides an analytical foundation for separating measures designed to prevent hazardous exposure from those intended to address violations after legally recognizable harm has occurred. The combined interpretation indicates that Indonesian environmental legislation recognizes several potential avenues of protection, although the accessibility of each mechanism depends on its particular procedural conditions and the circumstances of the affected individual.

Establishing a causal relationship between unlawful medical-waste disposal and alleged injuries presents a substantial evidentiary challenge when hazardous materials enter uncontrolled disposal locations through several possible institutional pathways. Documentary evidence concerning waste generation, segregation, storage, collection, transportation, treatment, and final disposal may assist in identifying the responsible actors and reconstructing the circumstances surrounding a suspected violation. Medical examinations and relevant clinical documentation may support the assessment of alleged injuries, while technical findings concerning discarded materials may clarify whether particular exposure pathways are scientifically plausible. Amsalu et al. (2016) examine exposure to hepatitis viruses among medical-waste handlers, demonstrating the relevance of occupational biological hazards without establishing that comparable outcomes have occurred among individual Indonesian scrap collectors. Evidence synthesized by Woime (2026) further supports examining the health consequences of medical-waste disposal practices, although population-level findings cannot replace individualized proof of exposure, injury, and causation in legal proceedings. Article 61 of Minister of Health Regulation Number 3 of 2026 provides for environmental-health measures involving observation, risk analysis, and related protective activities that may support the identification of contamination hazards. The legal assessment must distinguish scientific evidence indicating possible exposure from evidence sufficient to attribute a particular injury to an identified defendant under the applicable liability provisions.

Institutional coordination is relevant because the identification of unlawful medical-waste disposal may require information held by healthcare facilities, waste-management operators, environmental authorities, and institutions responsible for public-health protection. Article 61 of Minister of Health Regulation Number 3 of 2026 provides a legal framework for environmental-health protection through measures addressing contamination, surveillance, and risk evaluation. Article 62 establishes regulated management stages for medical waste originating from healthcare facilities, including circumstances in which management activities may involve cooperation with qualified external parties. Article 63 separately regulates medical waste originating from community activities, making the distinction between healthcare-generated waste and community-generated waste relevant when identifying applicable management obligations. Research examining compliance with medical-waste management requirements in Indonesia identifies institutional implementation as an important consideration in assessing the effectiveness of protective arrangements (Lelyana, 2024). Hidayat and Kartini (2024) examine environmental-law enforcement concerning hospital wastewater management and identify supervisory and implementation issues, providing a relevant basis for considering

institutional challenges without treating the conditions of their study as verified findings for every medical-waste disposal case.

The legal protection of scrap collectors requires an integrated approach that connects the prevention of hazardous-waste exposure with accessible reporting procedures, identifiable institutional responsibilities, and legally appropriate mechanisms for recovering established losses. Article 28H paragraph (1) of the 1945 Constitution provides the constitutional foundation for safeguarding health and environmental quality, while Articles 65 and 66 of Law Number 32 of 2009 support environmental participation and protection against qualifying retaliatory proceedings. Articles 87, 88, 91, and 92 establish differentiated avenues for environmental liability and litigation, but their effectiveness for individual claimants depends on the fulfillment of substantive and procedural requirements. Minister of Health Regulation Number 3 of 2026 provides complementary preventive measures through contamination control, environmental-health assessment, and regulated medical-waste management, without independently creating a comprehensive compensation mechanism for exposed scrap collectors. Greater accessibility could be pursued through clearer exposure-reporting procedures, improved documentation of medical-waste transfers, targeted risk communication, and institutional coordination capable of supporting the identification of responsible parties. Research concerning occupational health and safety among informal waste pickers reinforces the relevance of protective arrangements that account for the particular conditions of informal waste-recovery activities (Akyen et al., 2025). The resulting normative contribution is a victim-centered interpretation of Indonesian environmental and health regulation that preserves existing legal requirements while identifying the need for more specific protection procedures and effective access to remedies for scrap collectors affected by illegal medical-waste disposal.

CONCLUSION

Indonesian environmental and health legislation provides a general legal foundation for protecting scrap collectors exposed to illegally disposed medical waste, but the examined provisions do not establish safeguards expressly tailored to their occupational vulnerability. Article 28H paragraph (1) of the 1945 Constitution recognizes the right to a healthy environment and healthcare services, while Article 65 of Law Number 32 of 2009 establishes environmental rights, access to information, and complaint mechanisms. Articles 59 and 60 of the same law impose hazardous-waste management obligations and prohibit unauthorized disposal, complemented by Articles 61–63 of Minister of Health Regulation Number 3 of 2026 concerning contamination prevention and medical-waste management. These provisions establish an indirect preventive framework by regulating the responsibilities of healthcare facilities and authorized waste-management operators rather than prescribing specific protective procedures for informal scrap collectors. The principal legal limitation concerns the insufficient recognition of occupation-specific vulnerabilities, particularly regarding hazardous-waste information, exposure reporting, and accessible protective measures for individuals encountering medical waste outside regulated facilities. Effective preventive protection consequently requires consistent implementation of existing legal obligations, traceable medical-waste management, and environmental-health supervision that addresses the exposure risks experienced by informal waste collectors.

Illegal medical-waste disposal may generate criminal, civil, and administrative liability under Law Number 32 of 2009, although each mechanism operates according to different statutory requirements and legal objectives. Criminal sanctions address established environmental offenses, administrative measures support regulatory compliance and environmental restoration, while civil liability under Articles 87 and 88 provides potential compensation for legally recognized losses, including through strict liability where its statutory conditions are satisfied. The strict-liability principle removes the requirement to establish fault within its applicable scope but does not eliminate the evidentiary requirements concerning actual loss and causation. Environmental complaints, protection against retaliatory proceedings, representative litigation, and organizational legal standing offer additional procedural safeguards, although their availability does not automatically guarantee compensation or recovery for affected individuals. Scrap collectors may encounter substantial difficulties identifying responsible parties, tracing improperly discarded medical waste, documenting exposure, and obtaining the evidence necessary to pursue legal remedies. Strengthening their protection requires more specific exposure-reporting procedures, reliable documentation of medical-waste

transfers, coordinated institutional supervision, and improved access to existing legal remedies, while preserving the distinction between normative legal findings and empirically verified enforcement outcomes.

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