

# Legal Liability of Mining Companies for Illness and Environmental Remediation Obligations to Local Communities

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## ARTICLE INFO

### **Article history:**

Received 10 April 2024

Revised 1 May 2024

Accepted 5 May 2024

### **Key words:**

Responsibility of mining companies,

Local community illnesses,

Health compensation,

Environmental remediation,

Environmental health law,

Proof of causality.

## ABSTRACT

Mining activities have the potential to cause disease in local communities as well as environmental damage as a source of disease. This normative legal study aims to analyse the Indonesian legal framework in regulating the responsibility of mining companies in relation to compensation for illness and environmental remediation. The study was conducted through an in-depth analysis of legislation, including the 1945 Constitution, the Health Law, the Environmental Law, the Mining Law, the Civil Code, and the Criminal Code. The results of the study show that compensation responsibilities are regulated through a combination of constitutional principles of the right to health, the polluter pays principle and strict liability in the Environmental Law, as well as civil lawsuits based on Article 1365 of the Civil Code. Meanwhile, the enforcement of environmental remediation obligations is guaranteed through reclamation and post-mining guarantee funds, progressive administrative sanctions, and civil and criminal charges. This legal framework is quite comprehensive but faces challenges in its operationalization, particularly in terms of scientific causality and the establishment of health-based remediation standards. The success of enforcing corporate responsibility is highly dependent on the institutional capacity of the government, inter-sectoral synergy, and public access to justice. This study recommends the formulation of derivative technical regulations, the integration of health and environmental data, and the strengthening of the capacity of law enforcement officials.

## INTRODUCTION

The mining industry has long been a strategic sector in the Indonesian economy, contributing significantly to state revenue and regional development. Mining activities, both large and small scale, involve the extraction of natural resources, which inherently alters the landscape and ecosystem. The physical and chemical changes caused by these activities are not limited to the mine site itself, but can extend to surrounding areas through various environmental pathways. The interaction between mining materials, processing chemicals, waste, and other natural components often produces by-products that have the potential to harm human health. These impacts do not appear instantly, but can be cumulative and latent, so that the effects are only felt after years of exposure. This places local communities living around mining areas in a vulnerable position, as they live in an

ecological system that has undergone major transformations and are at risk of continuous exposure to hazardous substances. In many legal discussions, it is often emphasized that economic development should be accompanied by careful consideration of its social and environmental consequences so that the benefits of development do not create new risks for the community (Mardikaningsih & Hariani, 2021). Protecting communities from hazardous environmental risks is an important part of fulfilling the right to health guaranteed by the state. This right is not only related to medical services, but also includes a safe environment that supports the overall health of the community (Harianto et al., 2024; Noor et al., 2023).

Research in various parts of the world shows a close link between mining activities and an increase in certain diseases in surrounding communities. Exposure to silica dust, heavy metals such as lead,

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mercury, and arsenic, as well as process chemicals such as cyanide, can cause a wide range of health problems. These include chronic respiratory diseases such as silicosis and asthma, heavy metal poisoning with neurological and renal effects, and an increased risk of cancer. Exposure pathways are also diverse, ranging from inhalation of contaminated air, consumption of contaminated water, to direct contact with soil containing mining waste. Local communities often depend on nearby natural resources to meet basic needs such as drinking water and agriculture, so when these resources are contaminated, the chain of exposure becomes more complex and difficult to avoid. Prolonged environmental exposure can exacerbate chronic health conditions and trigger the development of systemic diseases in the long term. This shows that the relationship between environmental conditions and human health cannot be separated in public policy analysis (Issalillah, 2022).

From a health law perspective, a fundamental question arises about how the responsibility of mining companies is constructed in the legal system when their activities correlate with the emergence of disease in local communities. This concept of responsibility goes beyond mere contractual or administrative obligations; it touches on aspects of victim justice, human rights to health, and the principle of sustainable development. The law is required not only to regulate mining permits and technical operations, but also to formulate clear mechanisms for establishing cause-and-effect relationships, measuring health losses, and enforcing restoration and compensation obligations. In the Indonesian legal system, which adheres to the civil law tradition, the construction of such responsibility must be found in legislation, ranging from constitutional provisions to implementing regulations in the mining, health, and environmental sectors. In practice, health law has developed to ensure that every individual receives adequate protection against risks that may threaten their health, including risks arising from industrial activities. Therefore, the existence of a clear legal framework is very important in ensuring certainty of protection for the community (Subiakso et al., 2023).

The reality on the ground often reveals a gap between the health impacts that occur and the legal responsibilities that can be enforced. Affected local communities face a double challenge: first, the burden of scientific proof linking specific diseases to specific mining activities; second, access to legal justice, which is often hampered by inequalities in

resources and knowledge. On the other hand, mining companies operate on the basis of valid permits and standards that they claim to have met. Questions about who is responsible, the extent to which that responsibility applies, and what constitutes fair reparations are at the heart of this complex legal issue. Similar issues are often found in many public policy debates where legal protection exists in principle but its implementation still faces various practical barriers in society (Mardikaningsih, 2021). The problem is exacerbated by the nature of diseases that may only emerge long after mining activities have taken place or even after the company has ceased operations. These conditions show that legal protection in the field of health does not only depend on regulations, but also on the ability of the legal system to guarantee public access to justice and effective dispute resolution mechanisms (Noor et al., 2023).

Therefore, a legal review is needed to untangle the legal responsibilities of mining companies for occupational diseases and environmental exposure in local communities. The focus of the analysis should cover two main interrelated aspects: first, the company's obligation to provide compensation to individuals who suffer from illness; second, the company's obligation to carry out environmental remediation in an effort to eliminate the source of disease and prevent new victims. These two aspects are the main pillars of the concept of restorative justice and public health protection within the framework of responsible industrial development. In many governance studies, compensation and environmental responsibility are often viewed as instruments to maintain fairness between economic actors and communities affected by development activities (Dahar & Mardikaningsih, 2022). This study aims to explore the normative basis, legal instruments, and enforcement procedures available in the Indonesian legal system to realize these two forms of responsibility. This approach is in line with developments in modern health law that emphasize a balance between economic development and sustainable public health protection (Harianto et al., 2024).

The main issue that arises is the weakness or absence of specific regulations that explicitly link certain diseases in the population to mining activities and establish operational standards of causality. Environmental and mining laws generally regulate impacts and general obligations, but rarely touch on the level of specific disease diagnosis and its attribution to specific sources of pollution from a mining operation. As a result, when disease clusters

emerge in a community, a highly technical, costly, and lengthy process of proof is required, which is often impossible for victims to undertake. Companies can easily refute the link by arguing that the disease is caused by other factors or is a natural local condition. The absence of a list of diseases legally recognized as mining-related, as exists in labor law for work-related diseases, leaves victims in a very weak legal position, dependent on expert opinions that may conflict with one another. Regulatory gaps like this often become a major obstacle in implementing effective protection for communities affected by industrial activities. Clear regulations are urgently needed to prevent communities from being in a weak position when dealing with institutions or businesses that have greater economic power (Sahidu et al., 2023).

Another challenge lies in the fragmentation of authority and regulations, which results in no single point of clarification of responsibility. The authority to regulate mining lies with the Ministry of Energy and Mineral Resources and local governments, public health with the Ministry of Health and Health Offices, and the environment with the Ministry of Environment and Forestry. Each ministry has different perspectives, regulations and interests, which can create loopholes for companies to avoid responsibility. A district health office head may conclude that there is a health crisis due to water pollution from mining, but this conclusion requires confirmation and follow-up from environmental and mining agencies, which may have different data and interpretations. This fragmentation is also evident in the compensation mechanism; health compensation may be regulated in civil and environmental law, while environmental restoration is regulated in environmental permits and environmental impact assessments, without comprehensive coordination between the two processes for the benefit of victims. This situation highlights the importance of cross-sectoral coordination in the health and environmental legal systems so that community protection can be effective and not hampered by differences in authority between agencies (Yatno et al., 2023).

The third fundamental problem is the absence of accessible, sustainable funding mechanisms for individual health recovery and environmental remediation after mining operations. The current reclamation and post-mining guarantee system focuses more on physical land management and does not take into account the long-term health costs to the community. These guarantee funds are

also not designed to handle individual claims from people who fall ill years after the mine has been in operation. When a company closes or is declared bankrupt, there are almost no funds left to treat chronic illnesses in the community that may only be diagnosed later. This creates a situation where the burden of health and environmental costs is ultimately borne by the state and the community itself, while the economic benefits have been enjoyed by the company. The absence of a permanent fund mechanism or mandatory liability insurance for long-term health impacts is a serious legal loophole. In addition, various studies also show that the social and psychological conditions of communities affected by environmental risks can increase mental pressure and stress, especially among vulnerable groups such as the elderly and communities with limited access to healthcare (Issalillah & Aisyah, 2022).

Currently, the Indonesian government continues to encourage investment in the mining sector, including strategic mineral mines for energy transition, while striving to improve governance and its social and environmental impact. In the new paradigm of natural resource governance, aspects of sustainability and social justice are important considerations. An assessment of the completeness and clarity of legal instruments that protect the health of communities from the impacts of mining operations is a crucial part of this assessment. Without a clear and enforceable framework of responsibility, claims of sustainable and responsible mining are meaningless. Local communities will continue to bear an immeasurable health burden, which ultimately reduces the quality of human resources and creates intergenerational injustice. Efforts to protect public health also need to take a preventive approach, as early prevention of health risks is an important part of sustainable public health policy (Issalillah, 2021).

At the same time, public legal awareness and civil society support are growing stronger. Cases of conflict between communities and mining companies often come to the surface, demanding fair and scientifically-based resolutions. The judicial system is also beginning to handle more environmental and health lawsuits. Therefore, a systematic and comprehensive academic study of the legal construction of mining companies' responsibility for disease is a pressing need. Such a study can serve as a basis for policy evaluation, regulatory improvements, the development of technical guidelines for law enforcement and medical personnel, and the strengthening of

advocacy capacity for victims. A clear understanding of existing laws and their loopholes is an essential first step in creating a more effective protection system.

This study aims to conduct an in-depth analysis of the legal framework governing the responsibility of mining companies in relation to compensation for people suffering from diseases in local communities and the obligation to restore the environment as a preventive and curative measure for public health. Theoretically, this study is expected to contribute to the development of the concept of corporate liability in Indonesian environmental health law. In practical terms, the results of this research are expected to provide a clear regulatory map, identify systemic weaknesses, and serve as recommendations for policy formulation, the development of technical guidelines for health workers and law enforcement officials, and the strengthening of recovery and compensation mechanisms for victims of mining-related diseases.

## RESEARCH METHOD

This study uses a normative legal research method. The normative approach was chosen because the focus of the study is to examine, analyse and construct applicable positive legal norms related to the responsibility of mining companies for disease and environmental remediation. This method aims to provide a systematic overview of the consistency, hierarchy, and completeness of legislation, as well as to identify gaps or ambiguities in norms that may hinder the enforcement of legal responsibilities. Normative research does not seek to empirically test the application of law in the field, but rather seeks to understand the law as written (law in books) and the underlying logic of legal reasoning. This approach is relevant for answering exploratory questions regarding the existing regulatory framework.

The research strategy was carried out through systematic and thematic qualitative literature studies. Primary legal sources included all Indonesian laws and regulations that are still valid and relevant to the research object. Secondary sources include law textbooks, reputable national and international scientific journal articles, institutional research reports, and court decisions that constitute important jurisprudence. Literature searches were conducted through legal databases such as Nexis Uni and Google Scholar with strict filtering, catalogues of renowned law university libraries, and official government agency websites.

To ensure the quality and validity of the analysis, this study applied the principles of source triangulation and audit trail. Every claim regarding legal provisions is always referred to specific primary legal sources (articles and paragraphs). Interpretative or comparative arguments are supported by credible and representative secondary sources. The synthesis process is carried out by comparing, contrasting, and summarizing findings from various legal sources to construct a coherent legal framework. This approach allows the research to go beyond a mere description of articles and instead conduct a systematic interpretation to understand how the responsibilities of mining companies should be constructed and enforced within the Indonesian legal system, as well as where the normative weaknesses lie.

## RESULT AND DISCUSSION

### Mining Companies' Liability for Compensation for Illnesses in Local Communities

The responsibility of mining companies for health risks arises as a consequence of the state's recognition of the right to health. Indonesia's legal framework regarding the responsibility of mining companies to provide compensation to individuals suffering from diseases caused by mining activities is rooted in the constitutional principle that health is a human right guaranteed by the state. Article 28H paragraph (1) of the 1945 Constitution affirms the right of every person to physical and spiritual prosperity, including access to health services. In addition, the quality of health services received by the community is often an important indicator in assessing the extent to which the right to health is truly fulfilled in daily practice (Darmawan et al., 2022). This basic norm serves as the foundation that all economic activities, including mining, must not compromise public health, and if health damage occurs, legal accountability mechanisms must be implemented. Occupational safety and health (OSH) cannot be separated from the smooth implementation of production in companies. Therefore, Article 86 of Law Number 13 of 2003 explains that every worker/laborer has the right to occupational safety and health protection, because without this protection, it can cause work accidents for daily workers (Santoso, 2023).

Protection of the community is not only seen from the aspect of medical services, but also from how the state and business actors guarantee the safety of the community from the risks of industrial activities. This shows that the right to health is closely related to development policies and

economic activities taking place in a region (Harianto et al., 2024). This constitutional mandate is not merely decorative, but is a binding norm that must be realized through legislation. This means that every sectoral law and regulation governing mining, the environment, and health must be in line with the spirit of protecting the right to health. Thus, a sick individual's demand for compensation is not merely a matter of personal loss versus corporate profit, but an effort to reaffirm the constitutional guarantee that has been violated by industrial operations.

Health services for miners and their communities, run through partnerships between the government and mining companies, tend to produce mixed results in terms of community health (Stewart, 2020). The legal position of victims, therefore, gains very strong legitimacy from the highest legal hierarchy, providing a solid moral and juridical basis for demanding corporate accountability. This constitutional framework shows that the issue of health compensation falls within the realm of basic rights protection, rather than merely a private relationship between victims and business actors.

The strengthening of these constitutional norms is then translated into more operational terms through sectoral regulations in the health sector. Law No. 17 of 2023 on Health emphasizes the obligation of the state and business actors to protect the public from health risks resulting from industrial activities. This law emphasizes that all development and natural resource exploitation activities must take into account environmental and public health aspects. If a disease is proven to be the result of mining activities, the mining company is obliged to provide compensation in the form of health services, rehabilitation and financial compensation. The government acts as a supervisor and guarantor that the public's right to health recovery is fulfilled.

In healthcare practice, the public not only needs access to services, but also adequate quality of service so that the health recovery process can run well and sustainably (Mardikaningsih, 2022). What is significant about this law is the paradigm shift from a curative approach to a preventive and restorative one. The obligation to provide compensation does not only arise after the disease has been proven in court, but can also be required as part of the health insurance programmed that companies must provide during operations. Compensation under this law is also broad in nature, not limited to money, but also includes

access to the health services necessary for recovery. This recognizes that health losses often cannot be fully compensated with money, but require ongoing medical intervention. The government, in this case the Health Department, is tasked with ensuring that this compensation scheme runs smoothly and acts as a facilitator in the event of disputes between the community and the company. With these regulations, the Health Law positions compensation as part of the structural responsibility inherent in high-risk industrial activities.

Outside the health sector, environmental aspects also play an important role in determining the scope of mining companies' responsibilities. Law No. 32 of 2009 concerning Environmental Protection and Management is the main instrument in regulating the responsibilities of mining companies. This regulation stipulates that every polluter or destroyer of the environment is obliged to restore and compensate the affected community. The compensation mechanism can take the form of direct compensation, provision of health facilities, or environmental restoration programmed that have an impact on public health.

In both criminal and administrative law, any action that has a serious impact on public health can, in principle, have legal consequences for the perpetrator, whether an individual or a corporation (Hartika et al., 2023). The "polluter pays" principle contained in this law emphasizes that mining companies are not only responsible for environmental damage but also for the resulting health impacts. Articles 87 to 90 of this law are at the heart of the compensation mechanism. The most relevant is the provision on strict liability for businesses that cause significant and important impacts. In the context of mining, this means that victims do not have to prove the company's fault. It is sufficient to prove the existence of harm (illness) and a causal link between mining activities and the harm. The burden of proving the causal relationship remains with the victim, but the burden of proving that the company is not at fault becomes the responsibility of the company. This provision is very important to offset the imbalance of resources in the legal process. Through this strict liability regulation, environmental law provides more realistic protection for victims of diseases caused by mining activities.

In addition to the environment and health, specific regulations in the mining sector also provide a normative basis for enforcing corporate responsibility. Furthermore, Law No. 4 of 2009 concerning Mineral and Coal Mining, which has

been amended by Law No. 3 of 2020, regulates the obligation of mining companies to carry out business activities with due regard to environmental and public health aspects. Mining companies are required to develop reclamation and post-mining plans that include environmental restoration and protection of the health of surrounding communities. In the event of illness caused by mining pollution, companies may be held legally liable through administrative, civil, or criminal mechanisms. A legal approach that combines various regulatory sectors such as health, environment, and mining shows that community protection requires cross-sectoral cooperation in public policy (Harianto et al., 2024). Although this law focuses more on the technical and administrative aspects of mining permits, the obligation to pay attention to public health as stipulated in Articles 95 and 103 is a vital legal hook. Violations of this obligation, which result in illness, can be construed as unlawful acts that form the basis of civil lawsuits. In addition, mining business permits (IUP) can be revoked or temporarily suspended if a company is deemed to have neglected its obligation to protect public safety and health, which is a very severe administrative sanction and indirectly forces the company to resolve compensation issues as a condition for continuing operations. This provision emphasizes that public health is an inherent part of the sustainability of mining business permits.

At the implementation level, civil law is the main means for victims to seek restoration of their rights. In the civil sphere, Article 1365 of the Civil Code on unlawful acts provides a basis for the community to claim compensation for health losses suffered as a result of mining activities. Lawsuits can be filed individually or through a class action mechanism as regulated in Supreme Court Regulation No. 1 of 2002. This allows affected local communities to collectively seek compensation from mining companies. In practice, legal mechanisms such as class actions are often seen as a more effective way for communities to fight for their rights when dealing with large companies that have greater resources (Darmawan et al., 2022). The strength of Article 1365 lies in its breadth. Any act that violates the law, or a person's legal obligations, or violates the subjective rights of others, and causes loss, must compensate for the loss. Violations of the Environmental Law, Health Law, or Mining Law are in themselves unlawful acts within the meaning of the law. Thus, victims of illness can build their case by showing that the company has violated the

provisions of these sectoral laws and that these violations have caused them to become ill. The class action mechanism is a highly effective instrument because it brings together many victims with similar types of losses, reduces the costs of individual cases, and strengthens the bargaining position vis-à-vis large companies. Through this mechanism, civil law functions as a corrective tool to balance the relationship between the affected community and mining corporations.

At the level of repressive law enforcement, criminal instruments have a specific role in controlling high-risk mining activities. In the criminal sphere, the Criminal Code and the Environmental Law provide the basis for law enforcement against mining companies that are negligent or deliberately cause pollution that affects public health. In health criminal law, violations of service standards or practices that harm the community can be subject to legal sanctions because they are considered to violate professional ethics and applicable laws (Hartika et al., 2023). For example, water pollution that causes skin diseases or respiratory disorders can be charged under environmental criminal law. Health Law No. 17 of 2023 also opens the door to criminal sanctions for serious violations that threaten public health, so that mining companies can be subject to criminal sanctions if they are proven to be negligent. Although the main purpose of criminal law is punishment, the criminal process has strategic value for compensation. First, a final and binding criminal court decision finding a company or its management guilty can be used as perfect evidence in a civil lawsuit. This will greatly facilitate the burden of proof for victims. Second, the threat of criminal penalties can be used as leverage in mediation or out-of-court negotiations to reach a fairer and faster compensation agreement. Companies often prefer to settle civil lawsuits with adequate compensation to avoid criminal proceedings that could damage their reputation and result in prison sentences for their executives. With these characteristics, criminal law serves as an effective tool to pressure companies to restore the rights of victims.

In addition to the role of the central government, local governments hold a strategic position in managing the impact of mining at the local level. Law No. 23 of 2014 on Regional Government gives local governments the authority to supervise mining activities in their regions, including aspects of public health. The proximity of local governments to the community often allows

for faster handling of health and environmental issues because local governments understand the social conditions of the local community (Mardikaningsih, 2022). Local governments can impose administrative sanctions, facilitate health recovery, and distribute compensation to affected communities. Thus, the compensation mechanism is not only regulated at the central level, but also at the regional level, which is closer to local communities. The role of local governments, particularly regents/mayors, is very central. They have the authority to issue regional regulations, grant and revoke permits, and conduct supervision. When there are reports of diseases suspected to be related to mining, the Regional Health Office can immediately conduct an epidemiological investigation. The results of this investigation can be used as a basis for the Regional Head to order the company to provide emergency health assistance or initial compensation, while awaiting a more formal legal process. This approach allows for a faster and more targeted response, given that local governments have a better understanding of local dynamics and can act as effective mediators between communities and companies. This pattern of decentralized authority strengthens the opportunities for more responsive and contextual resolution of health disputes.

The fulfilment of victims' rights does not stop at financial compensation alone, but also concerns the process of sustainable health recovery. In addition to financial compensation, Indonesian regulations emphasize the importance of community health recovery efforts. A community-oriented approach to health services is also an important factor in increasing public trust in the health system (Darmawan et al., 2022). Health Law No. 17 of 2023 stipulates that health recovery must be carried out comprehensively, including the provision of health services, medical rehabilitation, and psychosocial support. Mining companies are obliged to bear the costs of this recovery, while the government ensures that health services are available and accessible to the affected communities. This comprehensive approach recognizes that environmentally-induced diseases are often chronic and require long-term treatment. A one-time compensation payment will not be sufficient to cover ongoing medical expenses. Therefore, the company's obligations may take the form of providing special clinics or auxiliary health centers, regular health check-up programmed for at-risk populations, and the provision of essential medicines. This form of compensation is more equitable because it directly targets the needs of

victims and binds companies to a long-term commitment to restoring the health of the community, rather than simply fulfilling their legal obligations with a sum of money. This type of recovery scheme reflects a more restorative legal orientation that focuses on the real needs of the affected community.

Another equally important aspect of the compensation mechanism is the active involvement of the affected community. The legal framework also emphasizes community participation in the compensation process. The Environmental Law gives the community the right to obtain information, participate in the Environmental Impact Assessment (EIA) process, and demand compensation in the event of health damage. Industrial accidents, environmental degradation, health and safety issues, and impacts on local communities' livelihoods are examples of negative social and environmental impacts in the mining industry and environmental law violations (Zamroni et al., 2022). This strengthens the position of the community as active legal subjects in demanding their rights, not merely as objects that receive the impact. This right to participation is realized in the form of procedures for objecting to environmental documents, participation in monitoring teams, and the right to file lawsuits. In the context of compensation, the community has the right to know the results of environmental quality monitoring (water, air, soil) carried out by companies or the government, which can be used as preliminary evidence in claims. Their involvement from the outset in the decision-making process regarding mining operations can also prevent future conflicts and create a compensation mechanism that is more mutually agreed upon, rather than imposed from above. This participation strengthens the social and legal legitimacy of any compensation scheme that is implemented.

When viewed as a whole, these various legal instruments form a complementary accountability system. This shows that Indonesia's health law system continues to evolve to adapt to new challenges in development and community protection (Harianto et al., 2024). Overall, Indonesia's legal framework operationalizes the responsibility of mining companies through a combination of health, environmental and mining regulations. The government acts as regulator and supervisor, the community has the right to claim compensation, and mining companies are obliged to bear the costs of remediation. With the enactment of Health Law No. 17 of 2023, which strengthens the

integration of health in development, the compensation mechanism for communities suffering from diseases caused by mining activities has become clearer and more structured, ensuring that mining sector development does not sacrifice the fundamental right to public health. However, the operationalization of this law still faces significant challenges in its implementation. The completeness of regulations must be accompanied by the political will of local and central governments to consistently exercise their supervisory authority, as well as the courage of the judiciary to apply the principle of strict liability and issue compensation rulings that are restorative in nature, not merely symbolic. This situation indicates that the main challenge lies not in the absence of norms, but in the effectiveness of their implementation.

At this point, technical issues of evidence become the most crucial obstacle for victims. The biggest challenge in operationalizing this lies in proving the scientific causal relationship between an individual's specific illness and a specific source of pollution from the mine. Therefore, scientific support in the fields of health and law is very important so that the process of proving in court can be carried out more objectively and based on strong scientific data (Harianto et al., 2024). Although the law provides a framework, without technical guidelines from the Ministry of Health and the Ministry of Environment and Forestry on epidemiological and toxicological evidence standards that are acceptable in court, victims will continue to face difficulties. Inter-ministerial synergy is needed to develop an investigation protocol for environmental disease outbreaks involving mining companies, so that the results of these investigations have strong legal force as a basis for compensation claims, both through the courts and through administrative channels. The development of these technical guidelines is an important prerequisite so that the right to compensation does not remain a normative promise, but can be realized in concrete terms.

### **Environmental Remediation Obligations by Mining Companies as Part of Public Health Responsibility**

Environmental remediation in mining is a legal issue directly related to the protection of citizens' fundamental rights. Environmental responsibility is not only viewed as a moral obligation of companies, but also as part of a legal obligation that must be implemented in practice in every business activity

that has the potential to impact the community (Darmawan, 2022). Indonesia's legal framework regarding the obligation of mining companies to carry out environmental remediation as an effort to eliminate sources of disease and prevent further health impacts on local communities is rooted in the constitutional principle that everyone has the right to a good and healthy environment as stipulated in Article 28H paragraph (1) of the 1945 Constitution.

The right to health and a healthy environment is a fundamental right that must be guaranteed by the state, so that any mining activity that has the potential to cause pollution or environmental damage must be followed by measurable and legally enforceable remediation mechanisms. Protection of the community is not only related to medical services, but also includes protection from environmental factors that can affect the overall health of the community (Lethy et al., 2023). The logical consequence of this right is the state's obligation to prevent violations and, if they occur, to restore the situation. Therefore, the obligation of environmental remediation imposed on mining companies is not merely a contractual or administrative obligation, but a manifestation of the state's responsibility transferred to business actors as the parties directly causing the disturbance. This legal logic places environmental remediation as a necessity of a *restitutio in integrum* nature, which is to restore the environment to such a condition that its ecological function as a supporter of public health can be recovered. Thus, remediation efforts should not be viewed as charitable activities of companies, but as legal obligations arising from violations of the constitutional rights of citizens. This perspective emphasizes that environmental remediation is an instrument for restoring rights, not a voluntary policy option.

The relationship between environmental degradation, public health, and poverty reveals the systemic impact of mining activities. Extractive industries, including mining companies, tend to exacerbate poverty at the regional and local levels through their impact on the environment and human health in affected locations (Engebretsen & Brugger, 2021). Various regulations have begun to emphasize that economic activities must be carried out transparently and responsibly so as not to cause social or environmental harm to the surrounding community (Setyastomo et al., 2024). Law No. 17 of 2023 on Health emphasizes that environmental health is an integral part of the national health system. This regulation emphasizes that all development activities, including mining, must

take into account public health aspects.

Poor environmental quality can accelerate the emergence of various chronic and degenerative diseases in the community, making environmental improvement efforts an important part of long-term disease prevention (Khayru, 2022). If mining activities cause disease, mining companies are obliged to take environmental improvement measures as part of their promotional and preventive efforts. The government acts as a supervisor and guarantor that these obligations are properly carried out, so that the community is not continuously exposed to health risks. This law explicitly links environmental health with public health. This provides a strong basis for the Health Office to not only treat victims, but also issue recommendations or even orders to companies to immediately carry out certain environmental remediation measures, such as cleaning water sources or controlling dust, as part of efforts to combat disease outbreaks. The obligation to make improvements is a non-clinical public health instrument. From this perspective, mining companies are required to be part of the public health system by eliminating disease-causing agents from the environment, which is the most fundamental intervention in environmental epidemiology. This approach broadens the meaning of corporate responsibility from merely being an economic actor to being an influential actor in the protection of public health.

The obligation to improve the environment takes on a clearer operational form through environmental regulations. Law No. 32 of 2009 concerning Environmental Protection and Management is the main instrument in regulating the execution of environmental improvement obligations. Article 53 of this law stipulates that every business operator is obliged to restore the environment in the event of pollution or damage. Such remediation includes stopping the source of pollution, cleaning up, rehabilitating, and restoring the environment. In relation to health, environmental remediation means eliminating risk factors that can cause disease, such as water, air, or soil pollution that directly impacts local communities. Crucially, Article 54 stipulates that environmental remediation must be carried out based on the results of an environmental audit or other studies. This provides an objective methodological framework: before remediation is carried out, there must be a clear assessment of the extent of the damage and the remediation strategy. For cases that have an impact on health, this

assessment must involve environmental toxicologists and epidemiologists to ensure that the remediation plan will effectively eliminate exposure pathways and break the chain of disease transmission. This process ensures that environmental remediation is not a ceremonial activity, but rather a technical intervention whose success can be measured. With this scientific study-based approach, environmental remediation gains both technical legitimacy and legal force.

In addition to environmental regulations, the mining sector has specific regulations related to post-exploitation restoration. Law No. 4 of 2009 concerning Mineral and Coal Mining, which has been amended by Law No. 3 of 2020, regulates the obligation of mining companies to prepare and implement reclamation and post-mining plans. Reclamation, especially in areas that do not comply with regulations, aims to prevent companies from seeking profit without considering their responsibilities in reclamation, particularly under mining sites (Joni, 2021). These plans are not only oriented towards ecological restoration but also towards protecting public health. Mining companies are required to provide reclamation and post-mining guarantee funds deposited with the government, so that the execution of environmental remediation obligations can be ensured even if the company experiences financial difficulties. This guarantee fund mechanism is the most tangible guarantee of execution. The funds are managed by the government and will be disbursed to finance reclamation if the company fails to do so. In the context of health, post-mining plans must include long-term health monitoring programmed for the community and plans to deal with sources of pollution that have the potential to cause post-operative diseases, such as tailing storage facilities or mine pits that become breeding grounds for disease vectors. Thus, environmental remediation obligations have a long-time dimension, even beyond the mining operation period, to ensure that sources of disease do not emerge as a legacy of activities that have ceased. This arrangement shows that mining law views public health as part of cross-generational responsibility.

The effectiveness of environmental remediation obligations depends heavily on the state's ability to enforce them administratively. The success of a regulation is not only determined by its existence in written regulations, but also by how it can be implemented in practice by the competent authorities (Darmawan, 2024). In the administrative sphere, the government has the authority to impose

sanctions if mining companies fail to fulfil their environmental remediation obligations. The Environmental Law provides instruments in the form of warnings, fines, license suspensions, and even revocation of business licenses. This mechanism ensures that environmental remediation obligations are not merely normative but have real legal force. Thus, mining companies cannot ignore their environmental remediation obligations without legal consequences. This coercive power is very important because administrative sanctions can be applied relatively more quickly than civil or criminal proceedings. Revocation of permits is the most feared sanction because it halts the company's economic activities. This threat can force companies to prioritize the environmental remediation requested by the environmental authorities. In addition, the government can order coercive measures (transom), whereby the government itself carries out environmental remediation at the company's expense. This provision, regulated in Article 76 of Law No. 32 of 2009, is an ultimate enforcement tool that ensures physical environmental improvements continue regardless of the company's good intentions. This administrative instrument makes the state a key subject in ensuring the direct and effective protection of public health.

Beyond the role of the state, the community also has direct access to legal channels to demand environmental improvements. Community involvement is often seen as an important factor that strengthens the effectiveness of law enforcement because the community is the party that feels the direct impact of a violation (Darmawan et al., 2020). In the civil sphere, Article 1365 of the Civil Code on unlawful acts provides a basis for the community to seek compensation if mining companies fail to carry out environmental remediation, thereby causing illness. Lawsuits can be filed individually or through a class action mechanism. This strengthens the position of the community as the party entitled to demand the execution of environmental remediation obligations for the protection of their health. A civil lawsuit can be formulated not only to seek compensation for illnesses that have been suffered, but also to seek a court order (cease and desist order) for the company to immediately carry out specific environmental remediation. For example, the community can sue to require the company to build adequate wastewater treatment facilities or to close excavation pits that have become pools of water causing malaria. Court decisions ordering specific

actions (performance) are enforceable; if the company refuses, enforcement can be carried out with the assistance of the court, even though asset seizure. This civil law route provides the community with a direct legal tool to force remediation, complementing and sometimes preempting government action, which can be slow. With this mechanism, public health protection gains a more participatory and results-oriented enforcement channel.

The criminal approach places environmental remediation obligations within a repressive but strategic law enforcement framework. Sanctions are often seen as an important tool to deter and encourage behavioral change among offenders (Mahmud et al., 2023). In the criminal sphere, the Environmental Law and the Criminal Code provide the basis for law enforcement against mining companies that intentionally or negligently cause pollution that impacts public health. For example, water pollution that causes diarrhea or air pollution that causes respiratory problems can be charged under criminal law. Health Law No. 17 of 2023 also opens the door to criminal sanctions for serious violations that threaten public health, so that mining companies can be subject to criminal sanctions if they are proven to be negligent. Although criminal sanctions in the form of fines or imprisonment do not directly restore the environment, criminal proceedings can result in verdicts that require the convicted party to make improvements as an additional punishment. In addition, the threat of criminal penalties creates a strong deterrent effect and encourages companies to proactively implement environmental remediation as part of their efforts to minimize the risk of criminal prosecution. The prosecution may also include an environmental remediation agreement (plea bargaining) in the prosecution process, whereby the company agrees to carry out remediation supervised by the government in exchange for a lighter sentence. This is a pragmatic legal mechanism to accelerate the execution of remediation. Through criminal proceedings, the obligation to remediate the environment acquires a strong coercive dimension while encouraging changes in corporate behaviour.

At the implementation level, the role of local government is an important factor in ensuring that environmental remediation obligations are actually carried out. The involvement of various parties in resolving environmental issues is often understood as part of efforts to maintain a balance between development interests and the protection of the

quality of the community's environment (Dahar et al., 2022). Law No. 23 of 2014 on Local Government grants local governments the authority to oversee the implementation of environmental remediation obligations by mining companies. Local governments can conduct inspections, impose administrative sanctions, and facilitate community health recovery programmed. Thus, the execution of environmental remediation obligations is guaranteed not only at the central level, but also at the local level, which is closer to local communities. The advantage of local governments is their flexibility and local knowledge. They can issue more specific Regional Regulations on environmental remediation standards for certain types of mines in their areas, including technical obligations that directly address local health issues, such as the obligation to provide alternative clean water if community water sources are polluted. Local governments can also form integrated teams involving the Environment Agency, Health Agency, and Energy and Mineral Resources Agency to conduct field verification of reclamation implementation and ensure that indicators of successful remediation include health parameters, such as a decrease in the incidence of certain diseases in reclaimed locations. This role makes local governments the main link between national policy and the reality of public health in the field.

In addition to the state, the community has a strategic position in ensuring transparency and accountability in environmental remediation. The legal framework also emphasizes the importance of community participation in monitoring environmental remediation obligations. Community participation in various public policies is also fundamentally related to efforts to create a more harmonious relationship between the government, business actors, and local communities so that the potential for conflict can be minimized (Nuraini & Halizah, 2021). The Environmental Law grants the community the right to obtain information, participate in the EIA process, and report violations. This participation strengthens accountability mechanisms, so that mining companies are not only monitored by the government but also by the communities directly affected. The community can form independent monitoring forums or join monitoring teams formed by the government. They are entitled to receive periodic reports on the implementation of reclamation and environmental restoration. If they observe any irregularities or negligence, their reports to the government have legal force as official

complaints that must be followed up. Active community involvement is also often seen as part of collective social responsibility in maintaining environmental sustainability for future generations (Nuraini et al., 2022). In some cases, the community can even carry out simple scientific monitoring, such as water sampling, the results of which can be used for comparison with the company's official data. This active involvement creates a multi-layered monitoring system that makes it more difficult for companies to evade responsibility or make superficial improvements. Community participation ultimately functions as a social control mechanism that strengthens the effectiveness of formal law.

When viewed systematically, these various legal instruments complement each other in ensuring health-oriented environmental remediation. Overall, Indonesia's legal framework establishes a comprehensive system to ensure the execution of mining companies' obligations to carry out environmental remediation. Health Law No. 17 of 2023 emphasizes that public health is a top priority, the Environmental Law provides instruments for restoration and sanctions, the Mining Law regulates reclamation and post-mining mechanisms, while the Civil Code and Criminal Code provide the basis for civil and criminal liability. With this combination of regulations, the enforcement of environmental remediation obligations is not only normative but also has real legal force to eliminate sources of disease and prevent further health impacts on local communities. However, the success of this system is highly dependent on the capacity and integrity of government officials to use all these instruments optimally and courageously. Solid coordination between environmental, health, mining and local government agencies is key to ensuring that environmental remediation is truly complete and breaks the chain of disease. Without strong institutional synergy, comprehensive regulations risk remaining mere formalities.

Behind a relatively complete legal framework, conceptual challenges still arise in assessing the results of environmental remediation. However, gaps remain, particularly regarding the standards for successful environmental remediation from a health perspective. Current regulations define the success of reclamation more in terms of vegetation cover and land stability, with less emphasis on public health parameters such as a reduction in pollutant concentrations in the food chain or a decrease in the prevalence of related diseases. It is

necessary to develop health-based environmental remediation performance indicators (health-based remediation goals). This requires joint technical guidelines between the Ministry of Health and the Ministry of Environment and Forestry that integrate environmental quality standards with health standards, so that environmental remediation carried out by mining companies can be objectively assessed to determine whether it has eliminated threats to the health of local communities. Strengthening these health-based indicators is an important step to ensure that environmental remediation truly impacts the quality of life of affected communities.

## CONCLUSION

Based on the normative legal review conducted, it can be concluded that the Indonesian legal framework has regulated the responsibility of mining companies for diseases in local communities and the obligation to repair the environment in a multi-sectoral and multi-instrumental system. For compensation, the legal framework relies on the integration of the 2023 Health Law, the 2009 Environmental Law with the polluter pays principle and strict liability, the Mining Law, and civil law through Article 1365 of the Civil Code and class action lawsuits. Meanwhile, for environmental remediation, enforcement is guaranteed through reclamation and post-mining instruments with guarantee funds, progressive administrative sanctions, and the possibility of civil and criminal charges. The essence of this regulation is the recognition that health impacts and environmental damage are two sides of the same coin, so that corporate responsibility must cover both aspects in a restorative and preventive manner. However, the existing legal construct is still general in nature and requires more technical implementation tools for the operationalization of causality testing and the establishment of health-based recovery standards.

The implications of this legal construct demand a transformation in the approach of all stakeholders. For the government, the implication is the need to consolidate authority and data between the Ministry of Health, the Ministry of Environment and Forestry, the Ministry of Energy and Mineral

Resources, and local governments in responding to a single case of health impacts caused by mining. This requires clear joint protocols and investigative capacity based on environmental epidemiology and forensic toxicology. For mining companies, these legal implications mean that risk management must be expanded beyond internal occupational safety and administrative environmental impact assessments (AMDAL) to include long-term community health monitoring and the readiness of funds and emergency response plans for rapid compensation and environmental remediation. For communities and their supporting organizations, this framework opens up broader legal space for litigation, but also requires strengthened capacity in health evidence documentation, participatory environmental monitoring, and navigation of complex legal systems.

To refine and strengthen the execution of mining companies' legal responsibilities, several concrete steps are needed. First, the government must immediately issue a Government Regulation or Ministerial Regulation as a derivative of the 2023 Health Law that specifically regulates the procedures for determining and proving diseases caused by environmental pollution from mining activities, including a list of recognized diseases and methods of causality assessment. Second, there is a need to integrate the environmental quality monitoring databases (water, air, soil) of companies and the Ministry of Environment and Forestry with community-based disease surveillance data from the Health Office for early detection and rapid response. Third, the scope of the reclamation and post-mining guarantee fund mechanism needs to be expanded by adding a special fund component for addressing public health issues caused by the impact of mining, which can be accessed based on the decision of an independent team of experts. Fourth, training and certification for judges, prosecutors, and investigators on the technical aspects of environmental and mining health law needs to be conducted regularly to improve the quality of case handling.

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