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# CONTROLLED BUSINESS OF WHITE ASBESTOS IN VIETNAM: POLICY PERSPECTIVES AND COOPERATION WITH RUSSIA

*White asbestos (chrysotile) remains widely used in Vietnam's construction sector (especially in roofing), despite a global consensus on its health hazards. In contrast, more than 60 countries – including all EU members, Australia, and Japan – have banned asbestos outright (International Ban Asbestos Secretariat [IBAS], n.d.). Russia, one of Vietnam's main chrysotile suppliers, continues to promote "controlled use" of white asbestos as an alternative to bans.*

*This article compares Vietnam's regulatory framework, industrial usage, and socio-economic context of white asbestos with that of Russia, to draw policy lessons for Vietnam while aligning with Vietnam's current stance of controlled use.*

*A comparative case study approach is applied, reviewing policy documents, industry data, and health reports from Vietnam and Russia. Key differences in regulatory approach and outcomes are analyzed.*

*Vietnam maintains chrysotile as a conditional business (regulated but not prohibited) and had considered a phase-out by 2023, but implementation stalled amid industry and policy pushback. Russia's industrial and social policy strongly supports asbestos use (employing hundreds of thousands) with no ban, focusing on regulated safe-use standards. Vietnam imports ~65,000 tons of Russian/Kazakh chrysotile annually, raising concerns about health risks without strong mitigation.*

*Russia's experience illustrates that prolonged asbestos use under regulation, can not lead to significant public health burdens. Research conducted by several independent scientific groups indicates that the prohibition of chrysotile use is driven by political and competitive interests. Accordingly, Vietnam can continue its controlled-use policy while strengthening regulations, workplace safety measures, health surveillance, and international cooperation. By doing so, Vietnam may mitigate health risks and responsibly manage socio-economic needs, drawing on lessons from both global best practices and Russia's model of asbestos governance in occupational safety management model for the production and use of asbestos-based products, as well as data from independent research groups in this field of knowledge.*

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## Introduction

Asbestos — particularly chrysotile or "white asbestos" — has historically been valued for its durability and heat resistance in construction materials. However, it is a documented human carcinogen linked to lung cancer, mesothelioma, and asbestosis [1]. In response to the health hazards, dozens of nations have banned all forms of asbestos. Globally, over 60 countries have implemented national asbestos bans, reflecting a consensus that no level of asbestos use is considered safe (IBAS, n.d.) [2, 3].

Vietnam is among the countries that still permit controlled use of chrysotile asbestos. Since the 1960s, Vietnam has used chrysotile in manufacturing asbestos-cement (AC) roofing sheets and other construction products. As of the early 2020s, annual chrysotile consumption in Vietnam is approximately 60 000–70 000 tonnes, making it one of the world's highest per-capita consumers of white asbestos. This continued high usage is driven by socio-economic factors: chrysotile-based roofing materials are inexpensive and have been vital for housing in rural and disaster-prone areas. Given these considerations, Vietnam's current policy is to manage chrysotile as a conditional business activity — i.e. it is regulated for safety but not prohibited under Vietnamese law (as per the Chemical Law and the amended 2020 Law on Investment, which kept chrysotile on the conditional business list). This policy of *controlled use* aims to balance economic needs with health precautions, in line with Vietnam's development priorities.

Despite regulatory controls, the ongoing use of white asbestos has raised public health concerns domestically. The World Health Organization (WHO) and International Labour Organization (ILO) have repeatedly urged countries, including Vietnam, to eliminate asbestos-related diseases by ending asbestos use [4]. In Vietnam, evidence of asbestos-related disease has begun to surface through case reports, but comprehensive epidemiological data are lacking. Moreover, as demonstrated by Soviet and Russian experience, such occupational diseases are limited in scope and are associated with violations of industrial and sanitary safety regulations in specific production areas: lack of proper ventilation, personal protective equipment, etc. This lack of local data has been cited by industry stakeholders to question the need for a ban, even as global health authorities warn of future disease burden. In the late 2010s, Vietnam's policy debate intensified: the Ministry of Construction, in coordination with the Ministry of Health, drafted a "Roadmap to Cease the Use of Chrysotile in Roofing Materials by 2023". This plan proposed a gradual reduction of chrysotile imports (e.g. 25% per year) aiming for a complete ban on asbestos roofing by 2023. The Prime Minister at the time issued a directive supporting this phase-out timeline, indicating high-level concern about asbestos risks. However, this politicized and lacking with any solid epidemiological evidence on diseases initiative met strong resistance from citizens, working in industry, domestic asbestos industry groups and certain government factions concerned about economic and employment impacts. Heated debates in the National Assembly (2018) revealed a clear divide: health advocates pressed for a ban citing public health protection, while industry representatives warned of job losses, higher costs for roofing, and argued that Vietnam as Russian Federation, don't have their own epidemiological evidence of harm from chrysotile use. There were also legal and trade arguments that an abrupt ban could conflict with existing investment commitments unless laws were amended. Ultimately, implementation of the 2023 phase-out roadmap was put on hold [5]. As a result, chrysotile use in Vietnam continues under the controlled-use policy, pending further research and consensus on an appropriate timeline for any future restrictions.

Given this context, Vietnam finds itself at a crossroads in asbestos policy. The country must decide how to strengthen protection of public health while managing economic realities and stakeholder interests. For adopting this decision, it is instructive to compare Vietnam's situation with that of the Russian Federation — a country that represents a contrasting case in asbestos policy. Russia is the world's largest producer and a major consumer of chrysotile asbestos, maintaining a longstanding policy of promoting asbestos use under regulated conditions rather than banning it. Examining Russia's experience with "safe use" of asbestos, including its regulatory approach and health outcomes, provides a valuable comparative perspective. This article adopts a comparative policy analysis of Vietnam and Russia, aiming to derive insights and recommendations for Vietnam [6].

The following sections present the comparative context of asbestos use in Vietnam and Russia, a detailed overview of Vietnam's national situation, considerations of international cooperation (particularly with Russia), and policy recommendations. Throughout, the analysis remains aligned with

Vietnam's current policy of continued controlled use of white asbestos, focusing on improving safety and management rather than advocating an immediate ban [7].

### Comparative context (Vietnam–Russia)

Vietnam and Russia offer two different but instructive models regarding white asbestos use. Russia has fully integrated chrysotile asbestos into its industrial and economic policy, whereas Vietnam is an end-user and importer now grappling with how to manage or possibly reduce asbestos use in the future. Russia's stance provides a case study of the long-term consequences of sustained asbestos usage under a controlled-use regime, while Vietnam's situation highlights the dilemmas faced by countries weighing health risks against economic and development needs [8].

In Russia, chrysotile asbestos remains legal and extensively used; the country has explicitly rejected a ban. Russia possesses vast asbestos deposits (notably in the Ural Mountains) and was, until recently, supplying over half of the world's asbestos. In 2020, Russia accounted for roughly 65% of global asbestos production, although this share fell to about 48% by 2023. The Russian government's official policy is that chrysotile can be used safely under strict regulations. Accordingly, Russia has established standards for "controlled use," including occupational exposure limits (similar to those of OSHA in the United States) and requirements for dust control and protective equipment in asbestos mining and manufacturing [9].

From the political and social and economic view, the asbestos industry in Russia has got strong support: it is a significant employer (on the order of 400,000 jobs) and contributor to the economy. High-level officials have historically allied with the industry — for example, in the 2000s, then-Prime Minister Vladimir Putin publicly endorsed and promoted the chrysotile sector. This close industry-government relationship has ensured minimal regulatory interference beyond the established safe-use guidelines. While many other countries classify chrysotile as a hazardous substance to be eliminated, Russian health authorities have approved thousands of asbestos-containing products as "safe if used properly," reinforcing the narrative that controlled use can work. Russia thus represents the pro-asbestos position internationally, in stark contrast to the minority of nations that have banned the material.

For Vietnam, Russia's situation is instructive on multiple levels. Firstly, it shows how economic dependency on asbestos can become deeply entrenched: once an industry employs a large workforce and supplies critical domestic needs, phasing it out becomes socio-politically difficult. Vietnam's own asbestos-cement industry, while smaller than Russia's, is economically important for certain sectors (manufacturing affordable roofing and providing jobs). This creates parallel pressures in Vietnam to continue chrysotile use, similar to Russia's dynamic of industry influence. Secondly, Vietnam currently reports few mesothelioma or other asbestos-disease cases, but this could be due to under-diagnosis or the fact that widespread use picked up later. If Vietnam continues heavy asbestos use without robust safeguards, it could face a delayed surge in asbestos-related diseases. Finally, the comparison highlights policy divergence in the international arena. Vietnam has been considering joining the global movement toward asbestos bans (as evidenced by the 2023 ban proposal), whereas Russia actively resists that movement [10].

Vietnam's policy debate is essentially a microcosm of the global debate: whether to follow the public health precautionary principle (like most countries) or to use the controlled-use model developed by Russia and a few others. In sum, the Vietnam–Russia comparison provides valuable lessons. Russia's experience suggests that without decisive strengthening of policy and enforcement, continued asbestos use tends to result in increasing health problems over time. Conversely, Russia also offers examples of measures (e.g., exposure limits, technological controls) that Vietnam could adopt or improve upon to make its own asbestos usage safer. The comparative context therefore sets the stage for Vietnam to carefully consider how to refine its controlled-use policy: learning from Russia's missteps to avoid a similar health crisis, while also leveraging any useful aspects of Russia's approach to maintain economic stability.

### National overview (Vietnam)

In Vietnam, the controlled use of white asbestos is shaped by a combination of historical reliance, socio-economic need, and evolving regulatory oversight [11].

**Usage and industry**: Vietnam's consumption of chrysotile asbestos (roughly 60–70 thousand tonnes per year in recent years) is primarily driven by the production of asbestos-cement construction materials. There are dozens of factories in Vietnam manufacturing AC roofing sheets, which remain in high demand for low-cost housing, rural infrastructure, and disaster relief construction (**Table 1**) [7].

**Table 1. Production and Consumption of Asbestos-Cement Roofing Sheets in Vietnam, 2013–2024 (in million m²)**

| Year | Production | Domestic Consumption |
|---|---|---|
| 2013 | 83 | 83 |
| 2016 | 85 | 83 |
| 2017 | 55 | 57 |
| 2018 | 46 | 47 |
| 2020 | 48 | 46 |
| 2023 | 35 | 34 |
| 2024 | 34 | 33 |

This industry developed over decades with state support due to asbestos cement's practicality and low cost. As a result, by the 2010s Vietnam became one of the largest users of chrysotile in the world, despite international trends against asbestos (**Table 2**) [7].

**Table 2. List of Active Asbestos-Cement Roofing Factories in Vietnam (as of March 2025)**

| Company Name | Location (Province) | No. of Lines | Capacity (million m²/year) |
|---|---|---|---|
| Đông Anh Construction Materials JSC | Hanoi | 2 | 10 |
| Hoàng Long Building Materials Co., Ltd | Hanoi | 2 | 3 |
| Diamond JSC | Vĩnh Phúc | 2 | 3 |
| An Phúc JSC | Yên Bái | 1 | 2 |
| Từ Sơn Roofing Materials JSC | Bắc Ninh | 1 | 3 |
| Thuận Cường JSC | Hải Dương | 2 | 3 |
| Bình Phát Co., Ltd | Thanh Hóa | 1 | 1 |
| Phương Bắc JSC | Thanh Hóa | 2 | 3 |
| Việt Thái JSC | Thái Bình | 1 | 2 |
| Hương Hoàng JSC | Quảng Trị | 2 | 4 |
| Tấn Phát Tâm Châu Factory | Quảng Trị | 2 | 3 |
| Quảng Phúc JSC | Quảng Ngãi | 2 | 4 |
| Đồng Nai Construction Materials JSC | Đồng Nai | 2 | 8 |
| Allybuild Vietnam JSC — Long An Branch | Long An | 1 | 2 |
| Đồng Tâm JSC | Hậu Giang | 1 | 2 |
| Total | | 27 | 60 |

Almost all raw chrysotile is imported, with Russia and Kazakhstan being the dominant suppliers (Russia provides a large portion of the ~65.000 tonnes imported annually) (**Table 3**) [7, 12].

This import dependency links Vietnam's industry closely to foreign suppliers and prices. It also means any future reduction in asbestos use would have implications for trade relations (especially with Russia) and the need for alternative materials from the other countries.

**Regulatory framework:** Vietnam's government classifies chrysotile asbestos as a conditional business line, not a banned substance. Practically, this means chrysotile can be used in manufacturing but under certain regulations and oversight. Key regulations govern occupational exposure levels to asbestos dust, requirements for industrial hygiene in factories, and guidelines on handling and disposal. For example, there are Vietnamese standards for maximum fiber concentrations in workplaces (in line with some international standards) and requirements that asbestos-handling facilities have ventilation and dust suppression systems. The Ministry of Construction, the Ministry of Health, and the Ministry of Labor, Invalids, and Social Affairs

**Table 3. Vietnam's Chrysotile Asbestos Imports by Source Country, 2013–2024 (in metric tons)**

| Year | Total Imports | Russia | Kazakhstan | China | Brazil | Others |
|---|---|---|---|---|---|---|
| 2013 | 59.304 | 35.642 | 10.120 | 8.910 | 4.632 | – |
| 2016 | 50.043 | 34.017 | 7.608 | 2.766 | 5.652 | – |
| 2018 | 23.852 | 14.712 | 5.239 | 1.001 | 0 | 2.900 |
| 2020 | 26.214 | 17.305 | 5.100 | 984 | 0 | 2.825 |
| 2023 | 28.193 | 17.880 | 3.560 | 6.686 | 0 | 67 |
| 2024 | 27.458 | 18.104 | 3.211 | 6.074 | 0 | 69 |

**Table 4. Measured Workplace Exposure to Chrysotile Asbestos in Selected Vietnamese Plants (2025)**

| Factory Code | Avg. Fiber Concentration (f/cc) | Standard Compliance (≤ 0.1 f/cc) |
|---|---|---|
| A | 0.071 | Yes |
| B | 0.058 | Yes |
| C | 0.065 | Yes |
| D | 0.081 | Yes |

(MOLISA) share responsibility for regulating asbestos use and protecting workers (**Table 4**) [5, 7].

Over the years, Vietnam has issued various directives to strengthen safe use: e.g. mandating the use of personal protective equipment for workers, periodic health check-ups for those exposed, and technical standards for safer production processes. Despite these rules, enforcement has been a persistent challenge. Inspections of asbestos product manufacturers have found instances of inadequate dust control and improper use of protective gear. Many small or medium-sized enterprises face resource constraints in fully implementing safety measures. Additionally, there is a large informal sector and end-user exposure (such as builders or villagers cutting asbestos roofing sheets without protection), which is harder to regulate.

**Health considerations:** To date, Vietnam has not officially documented a high incidence of asbestos-related diseases, which is a point frequently raised by asbestos industry advocates. They argue that chrysotile's risks are manageable and that Vietnam's population has not shown the same health impact seen in countries with longer asbestos histories. Health experts, however, caution that the absence of evidence is not evidence of absence. Vietnam may simply be in an earlier stage of the epidemiological curve — its heavy use of asbestos took off later than in Western nations, and diseases like mesothelioma can take 20-40 years to manifest after exposure. Moreover, Vietnam's surveillance of occupational diseases has limitations. Mesothelioma is not yet a routinely tracked or well-diagnosed condition across Vietnam's hospitals. This means cases could be missed or misreported. Recognizing this gap, Vietnam's Ministry of Health has been working on improving diagnostics and has considered adding asbestos-related conditions to the list of occupational diseases that must be reported. In the meantime, international organizations (WHO, ILO) and local health researchers continue to highlight the potential for a significant health burden in the future [13].

**Recent policy developments:** The late 2010s saw an important point in Vietnam's asbestos discourse. Following global trends and mounting pressure from health advocates, the government showed willingness to consider phasing out chrysotile. The most notable step was the draft national roadmap to ban chrysotile by 2023, spearheaded by the Ministry of Construction in 2017–2018. This proposal entailed a gradual approach: legally mandate year-on-year reductions in imports and find substitute materials for roofing. The process involved consultations with scientists, international experts, and stakeholders. Supporters of the ban included the Ministry of Health, the Vietnam General Confederation of Labour, and international NGOs. They emphasized Vietnam's duty to protect public well-being and cited global scientific consensus that all forms of asbestos are carcinogenic (IARC, 2012) and recommendations to eliminate asbestos to prevent disease. On the other side, the domestic chrysotile industry coalition pushed back. They argued that alternatives like polyvinyl alcohol (PVA) or cellulose fibers were too costly or not as durable, that a sudden ban would hurt the economy, and that more research was needed to prove causation of health issues under Vietnam's specific conditions. During National Assembly debates in 2018, these arguments led to a start in implementing the ban. Significantly, in 2020, Vietnam's National Assembly amended the Law on Investment and explicitly kept chrysotile on the list of conditional businesses, rather than reclassifying it as prohibited. This legal decision effectively endorsed the continued controlled use of asbestos in the medium term. Furthermore, a government Strategy for Building Material Development (2021–2030) approved in 2020 included continued management of asbestos roofing production, indicating that any phase-out would be a longer-term consideration subject to availability of affordable substitutes.

In summary, Vietnam's national policy currently supports the regulated use of white asbestos The government's challenge is to ensure that "controlled use" truly means minimizing exposure and preventing harm. The regulatory framework exists; the focus now is on strengthening enforcement and possibly controlling to compliance. Vietnam is also investing in research on alternative roofing materials (with a few pilot projects using non-asbestos fibers) and in gathering local health data to inform future decisions. This careful, stepwise approach reflects Vietnam's attempt to reconcile economic development objectives (affordable housing and industry interests) with the imperative to protect public health. The next sections discuss how international cooperation can assist Vietnam in this endeavor and present policy recommendations to fortify the current controlled-use regime.

## International cooperation

International cooperation plays a vital role in Vietnam's strategy to manage white asbestos risks while maintaining its controlled-use policy. Given that Vietnam's stance on chrysotile is somewhat at odds with the others of countries (which have banned asbestos), cooperation efforts are two-pronged: engagement with global health and safety initiatives to improve domestic asbestos management, and collaboration with pro-asbestos allies (notably Russia) to share best practices and ensure responsible trade.

On the global stage, Vietnam remains a party to several international conventions and programs relevant to asbestos. Notably, Vietnam has engaged with the Rotterdam Convention process, which seeks to list chrysotile asbestos as a hazardous material subject to prior informed consent in international trade. While this listing has been repeatedly blocked by a group of countries including Russia, Kazakhstan, Canada, India and others, Vietnam can still unilaterally apply the convention's principles. By ensuring that any asbestos imports or exports are transparently communicated and consensual, Vietnam demonstrates responsible conduct in line with international expectations without renouncing use. Additionally, Vietnam works with WHO and ILO on occupational health initiatives. For example, the ILO has provided technical assistance to strengthen Vietnam's labor inspections and worker safety training. Through collaboration with the ILO, Vietnamese authorities can enhance their capacity to enforce asbestos regulations — such as improving factory inspection regimes and adopting international best practices for dust control and personal protective equipment usage. WHO, for its part, has cooperated with Vietnam's Ministry of Health in raising awareness about asbestos risks and developing medical surveillance programs. Continued partnership with these organizations will help Vietnam upgrade its health monitoring (for instance, setting up national registries for mesothelioma and asbestosis) and ensure access to expertise in disease diagnosis and treatment.

Crucially, cooperation with Russia stands out due to Russia's position as Vietnam's main asbestos supplier and a like-minded proponent of controlled use. Vietnam and Russia have a history of economic cooperation, and asbestos trade is one facet of this relationship. Going forward, Vietnam can engage Russia (and other chrysotile-exporting nations) in dialogues to make asbestos use safer and more sustainable. This could include technical exchanges: for instance, Russian experts or companies might assist Vietnamese manufacturers in upgrading technology for better dust suppression, ventilation, and filtration in factories. Russia's industry has developed specific safety protocols (e.g., methods to handle asbestos fiber

bales with minimal dust release, or wet processing techniques) that could be transferred to Vietnamese plants. Such exchanges would improve workplace safety in Vietnam's asbestos-using factories. There is also a part for joint scientific research. Collaborative studies could be conducted, perhaps with Russian institutions that have experience in occupational medicine, to investigate health outcomes among Vietnamese workers. By sharing data and research findings, both countries could benefit — Vietnam gains evidence to guide its policies, and Russia gains an external validation of its controlled-use claims if the findings show low health impacts (or conversely, early warning if problems are found) [5, 14–18].

On the diplomatic front, Vietnam maintains communication with Russia regarding any policy shifts to avoid trade frictions. Rather than abruptly cutting imports, Vietnam could negotiate a phased adjustment that allows Russian suppliers to plan accordingly, possibly shifting their focus to supplying other materials (some Russian companies also produce alternative fibers or construction materials). This kind of economic diplomacy ensures that strengthening health protections does not unnecessarily harm the bilateral trade relationship.

Beyond Russia, Vietnam can learn from and work with other countries in the region. Several ASEAN neighbors, like Thailand, where there are not any strict limitations or restrictions on use. Technical cooperation or trade in alternative roofing technologies with countries like Thailand or Japan (which have expertise in non-asbestos fiber cement products) could be pursued under regional cooperation frameworks. Even as Vietnam continues using asbestos for now, participating in regional knowledge networks (for example, Asian forums on occupational safety or sustainable building materials) will keep Vietnam informed of new technologies and allow it to share its own approach to managing asbestos.

In summary, international cooperation for Vietnam involves a balanced engagement with both health-focused international bodies and key economic partners like Russia. By working with global agencies, Vietnam can elevate its safety standards and health surveillance to meet international norms, thereby mitigating the risks of continued asbestos use. By coordinating with Russia and other supplier nations, Vietnam can ensure that its controlled-use policy is supported by consistent supply chain practices and technical know-how. This cooperative approach strengthens Vietnam's capacity to manage white asbestos in a way that protects workers and the public, and it positions the country as a responsible player on the international stage [19].

### Policy recommendations

In light of the comparative insights and Vietnam's commitment to a controlled-use policy, the following policy recommendations are proposed to strengthen the safe management of white asbestos. These recommendations focus on enhancing regulation, workplace safety, health surveillance, and international collaboration, in alignment with Vietnam's current approach (i.e., **improving control without an outright ban**):

**1. Strengthen the regulatory framework and enforcement:** Vietnam should update its legal regulations governing chrysotile use to ensure clearer accountability and stricter oversight. This involves issuing detailed guidelines or technical standards for safe asbestos handling in all relevant industries (manufacturing, construction, waste disposal) and ensuring these standards align with international best practices. Key regulatory actions could include lowering the permissible exposure limits for asbestos fibers in workplaces (if current limits are less protective than international norms), mandating licensing or certification for companies and contractors that work with asbestos, and requiring risk management plans from these entities. Just as important is bolstering enforcement: labor and safety inspectorates must be given greater resources and authority to conduct frequent inspections of asbestos-using facilities. Penalties for violations (such as excessive dust levels or failure to provide workers with proper protective equipment) should be substantial enough to deter non-compliance. Essentially, Vietnam needs to move from having regulations to rigorously implementing them on the ground. This may involve capacity-building for inspectors (potentially with ILO assistance) and inter-agency cooperation so that health, labor, and environmental authorities jointly monitor asbestos use [20].

**2. Ensure workplace safety and worker protection:** A cornerstone of controlled use is protecting those who are directly exposed. Employers in the asbestos and asbestos-products industry must institute comprehensive safety measures. The government should require and verify that all factories using chrysotile have effective dust control technology (e.g., localized ventilation, wet processing methods) and that all workers are trained in hazard awareness. Regular training programs should be mandated so that workers know how to safely handle asbestos, use respirators or masks correctly, and follow decontamination procedures (such as changing clothes and showering after shifts to avoid bringing fibers home). Provision of high-quality personal protective equipment (PPE) — respirators, protective clothing — should be compulsory and free for workers. To enforce these measures, Vietnam could implement an accreditation system: factories that consistently meet safety standards get certified for "safe asbestos use," whereas those that fail inspections face shutdowns until compliance is achieved.

**3. Enhance health surveillance and medical response:** Improving the monitoring of asbestos-related health effects is critical for both prevention and policy evaluation. The Ministry of Health should establish a dedicated asbestos-disease surveillance program. This program would register workers with known asbestos exposure and provide them with periodic health screenings (e.g., annual chest X-rays or lung function tests, per medical guidance) to detect early signs of asbestos-related illness. Furthermore, Vietnam should officially recognize diseases like mesothelioma, asbestosis, and asbestos-related lung cancer as occupational diseases and make them notifiable — meaning any diagnosed case must be reported to health authorities. [1, 21] Creating a centralized registry of these cases will build the domestic evidence base that has so far been limited. Alongside surveillance, Vietnam should strengthen its healthcare capacity to manage potential cases. This could involve training doctors in occupational medicine to better diagnose asbestos-linked diseases and upgrading a few regional hospitals or clinics with specialists in pulmonary medicine. Over time, data from enhanced surveillance will allow Vietnam to judge the effectiveness of its controlled-use policy. If disease rates remain low, it validates the safety measures; if cases begin rising, it will signal the need for further action. In either scenario, prioritizing the health of workers and affected communities is a moral imperative. Proactive health monitoring and care will also counter any narrative that "no patients means no problem" by actively looking for issues rather than assuming none exist.

**4. Promote international collaboration and technical support:** Vietnam should continue and expand cooperation with international partners to improve asbestos management. This includes working with organizations like the WHO, ILO, and perhaps the Asian Development Bank for technical and financial assistance in implementing the above recommendations. For instance, Vietnam can seek expert advice or training modules from WHO on safe removal of asbestos from buildings, or from ILO on best practices for worker training and inspection regimes. Engaging in regional knowledge exchanges will help Vietnam stay updated on safer technologies and alternative materials. Importantly, collaboration with Russia should be leveraged in a positive way. Vietnam can initiate a bilateral initiative with Russia focusing on chrysotile safety — for example, creating a Vietnam-Russia working group where officials, scientists, and industry representatives share data on asbestos use and jointly develop improved safety protocols. Such cooperation could even explore the potential for Russian support in testing or introducing safer substitute fibers in Vietnam's industry over the long term (should Vietnam decide to gradually diversify). Meanwhile, clear communication with trading partners like Russia and Kazakhstan about Vietnam's regulatory expectations (e.g., that imported chrysotile must meet certain purity standards, free of amphibole contamination, etc.) can improve the quality of materials being used. International collaboration will reinforce Vietnam's efforts by bringing in global expertise and ensuring that its actions are recognized as part of the broader effort to eliminate asbestos-related

diseases (short of a ban). It demonstrates that Vietnam, while choosing a different timeline than some, is committed to the responsible and eventual safe resolution of the asbestos issue (**Table 5**) [7, 22].

By implementing these measures, Vietnam can significantly strengthen its controlled-use regime for white asbestos. These recommendations seek to balance socio-economic realities with the protection public health, using a science-based approach. They do not call for an immediate ban, but rather for Vietnam to make full use of all available tools to minimize risk. In doing so, Vietnam would address the concerns of health experts and international observers while maintaining stability for industries and workers. The experience of Russia has shown both the pitfalls of insufficient action and the importance of proactive management; Vietnam can take those lessons to chart a more health-conscious path within its current policy framework [23].

In addition to international studies, Vietnam has conducted its own field research to assess domestic exposure levels to chrysotile asbestos. Recently, the Vietnam Institute of Industrial and Trade Policy and Strategy (VIOIT) [24], in collaboration with experts from the Russian Federation, collected airborne dust samples at three Vietnamese fibrocement roofing sheet factories. Analysis of 206 air samples revealed that 52.4% contained detectable chrysotile fibers. The average measured fiber concentration was 0.019 ± 0.014 fibers/ml, remaining below the occupational exposure limit (OEL).

The proportion of workers exhibiting chronic pleural abnormalities (pleural thickening, pleural calcification) was notably low, consistent with the long latency period of asbestos-related diseases and the relatively low chrysotile exposure levels at these facilities. Overall, the findings indicate that while chrysotile fibers are present in the working environment of Vietnamese roofing sheet factories, their concentrations are generally low. Most samples complied with national technical standards for airborne chrysotile asbestos dust in workplace zones.

Nevertheless, the research team recommends ongoing periodic monitoring and enhanced source-level dust control measures to ensure long-term worker health protection (**Table 6**) [25, 26].

These results align with previous studies conducted in Vietnam, which reported that chrysotile dust concentrations in factories are typically significantly lower than at mining sites. This underscores the critical need for preventive measures even at low exposure levels.

## Conclusion

Vietnam reaffirms its commitment to a controlled-use policy for chrysotile asbestos, maintaining this regulated approach as the cornerstone of its asbestos management strategy. Rather than pursuing an outright ban, the government emphasizes strict regulation and scientific oversight to manage health risks while preserving socio-economic benefits.

**Table 5. Occupational and Environmental Exposure Standards for Chrysotile Asbestos in Selected Countries**

| Country | Workplace Exposure Limit (f/cc) | Ambient Air Limit (f/cc) | Regulatory Status |
|---|---|---|---|
| Vietnam | 0.1 | 0.001 | Controlled use |
| Russia | 0.1–0.5 | 0.06 | Controlled use |
| China | 0.8 | Not specified | Controlled use |
| Brazil | 0 (banned) | 0 | Banned since 2017 |
| EU (average) | 0.1 | 0.01 | Banned |
| USA (OSHA) | 0.1 | 0.01 | Restricted in some uses |

This policy acknowledges Vietnam's ongoing need for chrysotile-based products in construction and infrastructure, and it reflects a pragmatic balance — one that addresses public health concerns through enforced safety measures even as it sustains access to important materials for development. In doing so, Vietnam's stance mirrors that of a few partner countries and demonstrates a responsible, evidence-based approach to handling a known hazardous substance within its national context.

A key aspect of this strategy is the regulated importation of chrysotile exclusively from countries that continue to permit its controlled use, notably the Russian Federation and Kazakhstan. By sourcing only from these jurisdictions — which are Vietnam's primary suppliers and have established legal frameworks for asbestos use — Vietnam ensures that its chrysotile supply comes through official, transparent channels compliant with international norms. This selective sourcing not only streamlines oversight of the supply chain but also fosters closer cooperation with the exporting countries on maintaining quality and safety standards. Vietnam is actively strengthening ties with these producer nations through new bilateral agreements and binding international arrangements that formalize collaborative management of the chrysotile trade [14].

Through these agreements, Vietnam will ensure full traceability of imported asbestos-containing materials, from mine of origin to end use. Each shipment of chrysotile is to be accompanied by documentation verifying its origin and mineral purity (confirming that only high-grade chrysotile from approved sources is imported), as well as certifications of compliance with safety regulations in handling and transport. Moreover, protocols will require clear specification of the intended use of each import within Vietnam, guaranteeing that the material is utilized only in approved applications (such as asbestos-cement construction products) under controlled conditions. This traceability framework creates accountability at every step and serves as an additional safeguard — ensuring that imported chrysotile meets stringent safety criteria and is handled within a regulated, monitored environment. Such measures, developed in cooperation with Vietnam's international partners, will minimize the risk of any substandard or unsafe

**Table 6. Measurement results of estimated asbestos fiber concentrations in ambient air across Vietnam**

| Date of sampling | Company name | Sampling location | Name of the substance | Sample number | Filter brand and number | Duration of selection, minutes | Volume of air taken for analysis | | Air temperature at the sampling site. °C | Pressure, kPa, (mmHg) | Fibers per 100 fields | Concentration, fibers/cc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | working volume of air, dm | reduced to standard conditions, dm | | | | |
| 15.04.2025 | Dong Anh Factory | Room for bag cutting | fiber | 1-1 | Milliporc 1 | 192 | 384 | 384.0 | 20.0 | 760(101.3) | 55.5 | 0.071 |
| | | Chrysotile warehouse | fiber | 2-1 | Milliporc 2 | 192 | 384 | 384.0 | 20.0 | 760(101.3) | 46 | 0.059 |
| | | Production area (Curing & forming) | fiber | 3-1 | Milliporc 3 | 192 | 384 | 384.0 | 20.0 | 760(101.3) | 19.5 | 0.025 |
| | | Waste storage | fiber | 4-1 | Millipore 4 | 192 | 384 | 384.0 | 20.0 | 760(101.3) | 13 | 0.017 |
| | | Warehouse of finish product | fiber | 5-1 | Milliporc 5 | 192 | 384 | 384.0 | 20.0 | 760(101.3) | 7 | 0.009 |
| 16.04.2025 | Huong Hoang JSC | Room for bag cutting | fiber | 1-2 | Milliporc 1 | 166 | 332 | 322.1 | 29.0 | 760(101.3) | 28 | 0.043 |
| | | Chrysotile warehouse | fiber | 2-2 | Milliporc 2 | 166 | 332 | 322.1 | 29.0 | 760(101.3) | 10.5 | 0.016 |
| | | Production area (Curing & forming) | fiber | 3-2 | Millipore 3 | 166 | 332 | 322.1 | 29.0 | 760(101.3) | 7.5 | 0.011 |
| | | Waste storage | fiber | 4-2 | Millipore 4 | 166 | 332 | 322.1 | 29.0 | 760(101.3) | 3 | 0.005 |
| | | Warehouse of finish product | fiber | 5-2 | Millipore 5 | 166 | 332 | 322.1 | 29.0 | 760(101.3) | 9.5 | 0.014 |
| 18.04.2025 | Dong I am JSC | Room for bag cutting | fiber | 1-3 | Milliporc 1 | 175 | 350 | 335.1 | 33.0 | 760(101.3) | 47.5 | 0.069 |
| | | Chrysotile warehouse | fiber | 2-3 | Milliporc 2 | 175 | 350 | 335.1 | 33.0 | 760(101.3) | 33.5 | 0.049 |
| | | Production area (Curing & forming) | fiber | 3-3 | Milliporc 3 | 175 | 350 | 335.1 | 33.0 | 760(101.3) | 7.5 | 0.011 |
| | | Waste storage | fiber | 4-3 | Milliporc 4 | 175 | 350 | 335.1 | 33.0 | 760(101.3) | 10.5 | 0.015 |
| | | Warehouse of finish product | fiber | 5-3 | Millipore 5 | 175 | 350 | 335.1 | 33.0 | 760(101.3) | 13.5 | 0.020 |

asbestos entering the country and help uphold best practices in occupational and environmental safety.

Overall, this reinforced controlled-use policy is framed as part of Vietnam's broader commitment to responsible trade, public safety, and health protection, while still maintaining the economic and social advantages of accessible building materials. By demanding transparency and high safety standards from mine to marketplace, Vietnam shows that it is possible to protect workers and communities without depriving them of affordable, durable construction resources that are especially vital for rural and low-income areas. This course of action aligns fully with the current Vietnamese government direction on chrysotile management, underlining a unified national approach that prioritizes both development and welfare. In summary, Vietnam's policy direction on white asbestos — strengthened by international cooperation and rigorous oversight — illustrates a careful path forward whereby economic development and public health progress in tandem. It represents a confident, science-informed stance that balances the nation's infrastructure needs with its duty to safeguard its people, setting a responsible example for the controlled use of hazardous materials in the region.

*References*


1. Asbestos (chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Lyon, France : International Agency for Research on Cancer, 2012. No. 100C. Available at: https://www.ncbi.nlm.nih.gov/books/NBK304374/ (accessed: 03.05.2025).
2. Schüz J., Bukhtiyarov I., Olsson A. et al. Occupational cohort study of current and former workers exposed to chrysotile in mine and processing facilities in Asbest, the Russian Federation: Cohort profile of the Asbest Chrysotile Cohort study. *PLOS ONE*. 2020. Vol. 15(7). ID e0236475.
3. Schüz J., Kovalevskiy E., Olsson A. et al. Cancer mortality in chrysotile miners and millers, Russian Federation: Main results (Asbest Chrysotile Cohort Study). *Journal of the National Cancer Institute*. 2024. Vol. 116, Iss. 6. pp. 866–875.
4. International Labour Organization. Resolution concerning asbestos. Adopted by the 95th Session of the International Labour Conference. Geneva : ILO, 2006. Available at: http://www.ilo.org/public/english/standards/relm/ilc/ilc95/pdf/pr-20.pdf (accessed: 03.05.2025).
5. Ministry of Construction (Vietnam). Project to strengthen the management and use of chrysoft asbestos in the production of construction materials. 2022. Available at: https://vibonline.com.vn/wp-content/uploads/2022/08/Thuyet-minh-De-an-AC.pdf (accessed: 03.05.2025).
6. Donovan E. P., Donovan B. L., McKinley M. A., Cowan D. M., Paustenbach D. J. Evaluation of take-home exposure and asbestos-related disease: a review of the literature. *Critical Reviews in Toxicology*. 2012. Vol. 42, Iss. 9. pp. 703–731.
7. Vietnam Institute for Industrial and Trade Policy and Strategy (VIOIT). The Chrisotile Asbestos Industry and its Effects on Human Health and the Environment(2025). Available at: https://vioit.moit.gov.vn/vn/hoc-tac-quoc-te/vien-nghien-cuu-chien-luoc--chinh-sach-cong-thuong-to-chuc-hoi-thao-va-le-ky-ket-bien-ban-ghi-nho-hop-tac-voi-trung-tam-phat-trien-cong-nghe--ctd---lien-bang-nga-ve-nghien-cuu-amiang-trang-5734.4086.html (accessed: 06.05.2025).
8. Abelmann A., Glynn M. E., Pierce J. S. et al. Historical ambient airborne asbestos concentrations in the United States — an analysis of published and unpublished literature (1960s–2000s). *Journal of Toxicology and Environmental Health*. 2015. Vol. 27. pp. 754–766.
9. Xujun Li, Su X., Wei L. et al. Assessing trends and burden of occupational exposure to asbestos in the United States: A comprehensive analysis from 1990 to 2019. *BMC Public Health*. 2024. Vol. 24. ID 1404.
10. Visonà S. D., Capella S., Bodini S. et al. Inorganic Fiber Lung Burden in Subjects with Occupational and/or Anthropogenic Environmental Asbestos Exposure in Broni (Pavia, Northern Italy): An SEM-EDS Study on Autoptic Samples. *International Journal of Environmental Research and Public Health*. 2021. Vol. 18, Iss. 4. ID 2053.
11. World Health Organization. Asbestos: Key facts and overview. 2024. Available at: https://www.who.int/news-room/fact-sheets/detail/asbestos (accessed: 03.05.2025).
12. Chen M., Wang H., Zhang J. et al. Distribution of asbestos enterprises and asbestosis cases — China, 1997–2019. *China CDC Weekly*. 2020. Vol. 2(19). pp. 305–309.
13. Stayner L., Kuempel E., Gilbert S., Hein M., Dement J. An epidemiological study of the role of chrysotile asbestos fibre dimensions in determining respiratory disease risk in exposed workers. *Occupational and Environmental Medicine*. 2008. Vol. 65, Iss. 9. pp. 613–619.
14. Feletto E., Kovalevskiy E. V., Schonfeld S. J. et al. Developing a company-specific job exposure matrix for the Asbest Chrysotile Cohort Study. *Occupational and Environmental Medicine*. 2021. Vol. 79. pp. 339–346.
15. Kashansky S. V., Slyshkina T. V. Asbestos in water sources of the Bazhenovskoye chrysotile asbestos deposit. *International Journal of Occupational Medicine and Environmental Health*. 2002. Vol. 15(1). pp. 65–68.
16. Olsson A., Kovalevskiy E. V., Talibov M. et al. Tobacco smoking among chrysotile asbestos workers in Asbest in the Russian Federation. *Occupational and Environmental Medicine*. 2020. Vol. 77(9). pp. 623–627.
17. Pylev L. N., Kogan F. M., Kulagina T. F. Carcinogenic activity of asbestos cement dust. *Gigiena Truda i Professional'nye Zabolevaniya*. 1988. Vol. 7. pp. 55–57.
18. Tossavainen A., Kovalevsky E., Vanhala E., Tuomi T. Pulmonary mineral fibers after occupational and environmental exposure to asbestos in the Russian chrysotile industry. *American Journal of Industrial Medicine*. 2000. Vol. 37(4). pp. 327–333.
19. Ridho F. M., Ghani H. N., Laksono E. P., Faisal A., Nurrahman H. A. Occupational asbestos-containing materials exposure and risk of asbestosis among construction workers. *Jurnal Ilmu Medis Indonesia*. 2024. Vol. 3, No. 2. pp. 65–73.
20. Goswami E., Craven V., Dahlstorm D. L., Dominik Alexander, Mowat F. Domestic asbestos exposure: A review of epidemiologic and exposure data. *International Journal of Environmental Research and Public Health*. 2013. Vol. 10, Iss. 11. pp. 5629–5670.
21. Bernstein D. M., Tath B., Rogers R. A. et al. Final results from a 90-day quantitative inhalation toxicology study evaluating the dose-response and fate in the lung and pleura of chrysotile-containing brake dust compared to $TiO_2$, chrysotile, crocidolite or amosite asbestos: Histopathological examination, confocal microscopy and collagen quantification of the lung and pleural cavity. *Toxicology and Applied Pharmacology*. 2021. Vol. 424. ID 115598.
22. Acheson E. D., Gardner M. J., Pippard E. C., Grime L. P. Mortality of two groups of women who manufactured gas masks from chrysotile and crocidolite asbestos: A 40-year follow-up. *British Journal of Industrial Medicine*. 1984. Vol. 39(4). pp. 344–348.
23. Alpert N., van Gerwen M., Taioli E. Epidemiology of mesothelioma in the 21st century in Europe and the United States, 40 years after restricted/banned asbestos use. *Translational Lung Cancer Research*. 2020. Vol. 9, S. 1. pp. S28–S38.
24. Pham Van Hoan. Assessment of white asbestos fiber concentration in the working environment: Findings from airborne dust sampling at roofing sheet manufacturing facilities in Vietnam. *Vietnam Institute of Industrial and Trade Policy and Strategy*. 2024. Available at: https://vioit.moit.gov.vn/en/others/assessment-of-white-asbestos-fiber-concentration-in-the-working-environment--findings-from-airborne-dust-sampling-at-roofing-sheet-manufacturing-facilities-in-vietnam-6278.4134.html (accessed: 03.05.2025).
25. Andujar P., Lacourt A., Brochard P. et al. Five years update on relationships between malignant pleural mesothelioma and exposure to asbestos and other elongated mineral particles. *Journal of Toxicology and Environmental Health, Part B*. 2016. Vol. 19, Iss. 5–6. pp. 151–172.
26. Boffetta P., Donato F., Pira E., Luu H. N., Vecchia C. L. Risk of mesothelioma after cessation of asbestos exposure: a systematic review and meta-regression. *International Archives of Occupational and Environmental Health*. 2019. Vol. 92. pp. 949–957. EM