



**SPREP**  
Secretariat of the Pacific Regional  
Environment Programme



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## FACTSHEET

# Assessing the Risks and Solutions for Asbestos Containing Material Waste Disposal in the Pacific



Asbestos has been widely used in the Pacific as a building material and in a range of other uses. Today, Asbestos Containing Materials (ACM) represent a significant health risk to Pacific Islanders who may be exposed to the asbestos fibres. Over the last decade numerous projects have been undertaken to remove asbestos in the Pacific and reduce the risk of exposure. But much still remains, often in a deteriorating condition where fibres are readily released to the air. The prevalence of ACM is much higher in some countries than others.



In some recent projects sponsored by the Secretariat of the Pacific Regional Environment Programme (SPREP), asbestos waste has been exported for disposal whereas local disposal would, in most cases, be more appropriate. Some Pacific

countries with suitable facilities and procedures in place do permit the disposal of asbestos to land.

Human health impacts from asbestos can be severe. It causes lung malfunction and cancers. The main types of ACM in the Pacific are various building products and pipes mixed with cement, and common building products such as vinyl flooring. If fibres are released, asbestos can also contaminate soil.

Asbestos removal (remediation) requires careful procedures and properly trained personnel. The waste materials must be disposed of safely, ensuring that no-one can breathe in the hazardous fibres during remediation, transport, and disposal. Once landfilled or entombed, the ACM should not be disturbed.

## Historical ACM Management in the Pacific

A 2014 SPREP survey assessed the presence of ACM in 13 Pacific Island countries. The survey identified ACM distribution, risks to human health, and management strategies. Key findings indicated widespread ACM presence, particularly in Nauru, Niue, Cook Islands, Tonga, Vanuatu, and Solomon Islands, with lower levels in Tuvalu, Fiji, Samoa and other countries.

While primarily non-friable (i.e. locked up in another manufactured material such as cement), deteriorating ACM poses increasing risks. Some forms of ACM remain under-reported, including residential asbestos, particularly in vinyl flooring, and also in asbestos-cement water pipes.

Numerous SPREP-led remediation projects since 2014 have targeted schools, hospitals, and government sites in Cook Islands, Fiji, Nauru, Tonga, Kiribati and Niue. ACM waste was exported for disposal to New Zealand or in some cases to local landfill. Proper and safe ACM remediation projects have occurred independent of SPREP, and no doubt many other potentially less proper and safe removals as well from residences, churches and schools.

Disposal or end-of-life management of ACM waste in the Pacific is currently generally managed by one of the following methods:

- ▶ Placed in a local landfill not designed or prepared to receive ACM waste and often unsatisfactorily managed.
- ▶ Placed in a local landfill that can, by virtue of its design and/or management, properly receive ACM waste. Currently three Pacific countries have such facilities – Fiji, PNG and Tonga. Some disposal of asbestos waste has also been undertaken in landfills in other Pacific countries, including Samoa, Solomon Islands and Kiribati.
- ▶ Export the asbestos waste overseas for landfill disposal. In all cases to date, the export destination has been Auckland, New Zealand.
- ▶ In a few cases, ACM waste has been disposed in the sea.
- ▶ Store the waste for an indefinite period. This sometimes results in the waste reaching the environment – again to become a difficult problem to resolve.

Local landfilling is the preferred option if environmental and health impacts can be managed to a safe standard. Currently Fiji, PNG and Tonga are successfully landfilling ACM waste.

# Reasons that local ACM waste disposal is not widely used

Efforts to establish local landfilling for ACM waste in the Pacific have often encountered resistance. Key concerns raised across the region include:

## Perception of External Responsibility

There is a belief in some countries that asbestos was introduced by external parties and should therefore be removed and managed by those responsible.

## Resistance to Permanent Hazardous Waste Storage

There is general opposition to establishing a dedicated landfill for hazardous waste, with concerns that it will create long-term environmental and social liabilities.

## Cultural and Traditional Considerations

Land and water hold deep cultural significance in Pacific societies, and waste disposal can be perceived as an act of disrespect toward these natural resources.

## Land Tenure Issues

Many Pacific Island countries have complex land ownership structures, with land being privately owned or held in customary tenure.

## Environmental and Health Concerns

Communities express concerns about potential contamination of groundwater and the broader environment. This is despite evidence that properly managed ACM waste landfilling poses minimal risk, and that asbestos is not a serious groundwater contaminant.

## Limited Land Availability

Some Pacific countries have little available land, making waste disposal a significant challenge.

## ACM Waste Management Options



Technologies for the destruction of asbestos exist, but they are complicated and expensive. None are available in the Pacific or in nearby countries such as Australia and New Zealand. The main such technologies are thermal, chemical and mechanical treatment.

Two main options that do not involve destruction of asbestos are 'Management in Place' and Landfilling as follows:



### Management in Place

Management in Place involves encapsulation of ACM using specialised paints or encapsulants to prevent fibre release. Compared with removal it is cost-effective and reduces the risk, but does not remove the hazard. It is not a permanent solution and requires long-term ongoing management, including regular monitoring.

### Landfilling

Landfilling involves placement of ACM waste in a dedicated landfill cell to contain fibres and prevent exposure. This does not destroy ACM waste but removes the risk and is a permanent solution if left undisturbed.

For landfilling asbestos in the Pacific two options are available. Both need to be carried out under proper supervision and long-term security in well managed landfills.

### ACM Waste Cell

A separate landfill cell is developed for ACM waste. As asbestos is a natural mineral and does not break down, this is only a containment measure to ensure zero fibre release. It is not necessary to have an expensive plastic liner system although the base of the cell should be lined with inert material (such as clay) and compacted. The cell should be permanently capped.

### Co-disposal

ACM waste is mixed with other waste in the landfill. This approach can be used if landfill space is limited, good landfill management practices are used, and little cover material is available. The ACM waste is placed in the landfill with other waste, ensuring the waste containment is not compromised and the ACM waste is well covered (at least 300mm) by other waste. Any compaction should avoid disturbing the waste covering the ACM.

For both these options, the ACM waste should be brought to the landfill under proper notification and reception procedures and remain secure from any leakage of fibres. The location of the ACM waste should also be recorded.

*Note: As well as the local landfill option, the ACM waste can also be exported overseas for landfill disposal. ACM waste is internationally recognised as a hazardous waste and overseas export is governed by detailed conventions that must be strictly followed. These can be time consuming and complicated. Freight and associated costs, and landfilling costs at the export destination are all expensive.*

Another less common option of non-destructive ACM waste is disposal at sea. This is governed by two international conventions, each with strict conditions both difficult and expensive to meet. This method sets an unwelcome precedent.





# PESTLE Assessment of Options for ACM disposal

PESTLE is a strategic analysis tool that can be used to examine options being considered, in the light of six factors – Political, Economic, Social, Technological, Legal and Environmental. This type of assessment provides a useful assessment of the options for managing disposal of ACM waste.

## Political Factors

- A regional asbestos strategy, developed in 2011 was adopted by SPREP member countries as political goals. The policy goals of this strategy include minimising the adverse effects of asbestos on the environment and health of Pacific Island people and building capacity of stakeholders to promote effective asbestos management.
- If ACM waste is exported, the relevant international conventions must be followed.
- There is likely to be political resistance to local landfilling if local people indicate they are not in favour of local disposal of asbestos because of such issues as land tenure, or historical perceptions that asbestos is an imported problem.

## Economic Factors

- A detailed Nauru Case Study has shown that it is clearly much more expensive (by a factor of about five times) to export ACM waste than to dispose of it locally.
- There are inevitably local financial implications of local landfilling construction and its long-term management.
- The extra cost of providing for the local landfilling of ACM waste is not large as it can be combined with other necessary landfilling. If the procedure for landfilling ACM waste is kept simple and effective, then the additional cost can be kept quite low.
- Limited financial and technical resources in many Pacific countries constrain effective waste management solutions – often there is reliance on aid financing.
- There may be other economic benefits of local disposal, such as local employment opportunities.

## Social Factors

- Public perception and cultural resistance to hazardous waste landfills, and the need in Pacific cultures to respect land and water must be considered. Such attitudes can be manifested as a general aversion to having a hazardous waste landfill sited locally.
- Influence of historical narratives (e.g. New Zealand's role in introducing asbestos to Niue, and the British Phosphate Commission (BPC) introducing asbestos to Nauru and Banaba Island).
- Community concerns about environmental and health impacts. These concerns can be addressed by proper controls and effective techniques for disposal, including preparing the ACM waste before disposal.

## Technological Factors

- Landfilling of ACM waste must be carried out in such a way as to ensure such waste is not exposed to human contact again after landfilling, through fibres released for inhalation.
- The landfilling should take place at a location where ongoing management and monitoring will occur, such as an existing well-managed landfill. A permanent cap is needed over the ACM waste (concrete is ideal) and the waste needs to be registered clearly in records that are available in future.
- Containment of the waste in a landfill can be obtained by compaction of the base and exclusion of groundwater.
- Asbestos is not a serious water pollutant.
- ACM waste needs to be placed at a location where it will not later be affected by coastal erosion.
- The destruction options (thermal, chemical and mechanical) all have very significant and complex technical issues that make them unsuitable in the Pacific Island context.
- The option of “management in place” (in its original location) is technically feasible but offers only a temporary solution and requires careful ongoing management.

## Legal Factors

- The need to comply with international conventions adds complexity and costs where transboundary movements of ACM waste take place.
- Legal requirements for public liability insurance and environmental safety standards may increase the administrative burden of ACM waste management.
- Land ownership is predominantly private in many Pacific countries, creating legal challenges in securing land for landfills that can receive ACM waste.
- There is a need to enact a ban on importing new ACM products into Pacific countries and to enforce that ban into the future.

## Environmental Factors

- Potential environmental impacts of local landfilling, including groundwater contamination, raise concerns. Asbestos is not, however, a serious contaminant in water.
- Natural disasters such as cyclones have real potential to generate ACM waste as part of disaster debris. If local solutions are readily available, then such ACM waste can be dealt with promptly and effectively.
- There are environmental concerns about disposal to sea because turbulence or other adverse conditions may damage the asbestos containment, thus freeing loose ACM. Furthermore, any approved disposal to sea sets a bad precedent that may encourage the disposal of other hazardous wastes to sea.
- Local landfilling has a much smaller carbon footprint, compared with exporting which involves sea transport of dense and heavy ACM waste over long distances.

# PESTLE Decision Making Analysis

A tool for decision making called a decision matrix can therefore be prepared, based on the PESTLE criteria. This has been carried out on the three destruction technologies, and also management in place, local landfilling, disposal at sea, and export for disposal. This was done in order to select the best technology suitable in the Pacific for managing ACM waste using a scientific, evidence-based, decision framework. A summary decision matrix is set out below, with scores assigned up to 10.

Option	Political	Economic	Social	Technical	Legal	Environmental	Total Score
Local Landfilling	7	9	5	8	7	7	43
Management in Place	6	7	6	5	6	6	36
Export for Disposal	5	3	5	7	7	5	32
Disposal at Sea	5	4	3	6	3	2	23
Thermal Treatment	3	1	4	3	6	5	22
Chemical Treatment	3	1	4	2	6	5	21
Mechanical Treatment	3	1	4	2	6	4	20

This Decision Matrix assessment clearly indicates that local landfilling is the most logical and practical option for ACM waste management in Pacific Island countries. This conclusion is supported by:



The high cost of exporting asbestos waste to Pacific Rim countries, making overseas disposal financially less viable.



Technical feasibility, as controlled landfill operations can be effectively implemented with existing waste management techniques.



Environmental safeguards, ensuring that proper containment and monitoring strategies minimize potential risks.



Legal and regulatory alignment, as local landfilling can comply with international ACM waste management requirements when properly carried out.

However, some challenges remain, including political and community resistance, cultural concerns, and securing adequate funding for infrastructure. These must be addressed for successful implementation.



# Conclusion and Next Steps

The PESTLE analysis leaves little doubt that local burial of asbestos waste, conducted and maintained under strict health and safety protocols, is definitely the best solution to the legacy issues of ACM in the Pacific. In terms of the PESTLE criteria, it is:

- ▶ Politically viable if supported by public engagement and policy development.
- ▶ Economically the most cost-effective solution (about 5 x cheaper than export)
- ▶ Socially viable if community acceptance is gained through public engagement, transparency, and cultural sensitivity.
- ▶ Technically feasible with proper landfill design and management.
- ▶ Legally compliant if aligned with acceptable procedures.
- ▶ Environmentally safe when containment measures are properly implemented.

## The recommended next steps:

1. Secure policy commitment from national governments to advance asbestos landfill projects.
2. Conduct feasibility studies to identify suitable landfill disposal locations and infrastructure needs.
3. Establish regional cooperation mechanisms for knowledge exchange.
4. Develop funding proposals to secure financial support from national, regional, and international sources.
5. Launch community engagement programs to address public concerns and increase acceptance.



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