PACWASTE ASBESTOS PROJECT

JOHN O'GRADY
MORECROFT CONTRACTORS LTD

Forari Mine Vanuatu

PacWaste

PacWaste (Pacific Hazardous Waste) was a four year, €7.85 million project funded by the European Union and implemented by SPREP to improve regional hazardous waste management, in 14 Pacific island countries plus Timor Leste, in the priority areas of healthcare waste, E-waste, asbestos, and integrated atoll solid waste management.

Asbestos-containing wastes are a major issue for many Pacific Island countries with a history of use of asbestos-containing building materials.

SPREP Asbestos Goals

SPREP's regional priorities for asbestos management included conducting an inventory of the distribution of asbestos-containing materials (ACMs) in thirteen Pacific island countries, progressive stabilization of high-risk facilities such as schools and occupied dwellings, and final disposal of ACM wastes in suitable locations.

PacWaste Asbestos commenced with a series of baseline surveys to collect and collate information about the current status of asbestos and its management in the Pacific region to identify best practice options for interventions that are cost-effective, sustainable and appropriate for Pacific island communities.

PacWaste
PACIFIC HAZARDOUS WASTE MANAGEMENT
SPREP
PROE
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Basis and Countries Surveyed

The PacWaste first stage asbestos work aimed to meet part of the objectives of SPREP'S Pacific Regional Solid Waste Management Strategy 2010–2015, including the strategy set out in the earlier SPREP report 'An Asbestos Free Pacific: A Regional Strategy and Action Plan 2011'.

The thirteen Pacific Island countries that were included in the survey are (in alphabetical order):, Cook Islands, Fiji, Federated States of Micronesia (FSM), Nauru, Niue, Palau, Republic of Marshall Islands (RMI), Samoa, Solomon Islands, Tonga, Tuvalu Vanuatu

Malakal Power Station Palau

The Survey

- Various methods were used in the extensive survey including the use of a tablet-based application to collect data. A statistical approach was taken to assess the incidence of country-wide residential asbestos.

- The samples collected were mostly bulk (solid) samples, although some air and wipe samples were also collected. Almost all laboratory samples were sent by courier to EMS Laboratories Incorporated (EMS) located in Pasadena, California, United States of America.

- A systematic UK HSE risk assessment approach was adopted in order to assess the risks that the identified asbestos-containing material presented to site occupants and if applicable the public. This system presents a simple scoring method that takes into account not only the condition of the asbestos, but the likelihood of people being exposed to the fibres.

Old Ward 5 Tamavua Hospital Suva

Results for Residences

- Large numbers of houses (by %) have asbestos building materials in Nauru and Niue. Many of the houses in Niue with asbestos are abandoned houses. A program is in place to remove asbestos from houses in both countries.
- The Cook Islands, Kiribati, Solomon Islands, Tonga and Tuvalu have moderate amounts of asbestos building materials in houses and in most cases cladding only.
- Several countries have none or very low quantities of asbestos in houses. Fiji and RMI probably have almost none and FSM, Palau, Samoa and Vanuatu have very little asbestos in houses.
- The above conclusions are based on surveys done on a limited number of islands (namely the main islands). Nauru and Niue are single island states so the information can be relied on. For the countries that have numerous outer islands, however, the above conclusions need to be treated with some caution.

Nauru House

Other Findings

- The countries with the largest amount of non-residential asbestos locations are Nauru, Niue, Cook Islands, Tonga and Vanuatu. Fiji has few such locations.
- Banaba presents a special case regarding asbestos remediation. The amount of old and damaged asbestos present on Banaba is huge and a substantial remediation exercise is clearly needed. The logistical problems of such a clean-up are also huge, however, as there is no airport and no regular shipping.
- Most of the asbestos identified was non-friable building materials (mainly roofing and cladding). There were very few examples of friable asbestos. It should be noted, however, that much of the non-friable asbestos identified was in bad or very bad condition and is liable to be releasing asbestos fibres. It could therefore be considered at least partially friable.
- The types of asbestos problems are similar from country to country although there are very significant variations in incidence and quantity.
- The predominant form of asbestos is Chrysotile (White) Asbestos, although Amosite (Brown) Asbestos and Crocidolite (Blue) Asbestos do occur occasionally.

Nauru RONPhos Processing Area

Banaba Former Power Station

More Findings

- There will most likely be a need to bring in specialist supervision for any remedial work in the Pacific.
- The cost of materials in most countries is similar as almost all materials need to be imported from supplier countries.
- There is some awareness of asbestos management techniques in all countries, and certainly more in the countries where there are significant amounts of asbestos. Generally, however, there is little expertise available to perform professional asbestos removals to a recognised standard.
- The correct equipment for managing asbestos remediation is not available in any of the countries visited, with the exception of some PPE and the simpler tools required for removal operations.
- Safe and acceptable remediation techniques will be the same everywhere.
- A case can therefore be made for universal policy and procedures across the whole Pacific region for addressing asbestos problems.

Dept of Education Floor Tiles, Yap

Other Points

- Much can be done with management of the asbestos while it is still in place, including training as necessary and putting systems in place to minimise exposure to asbestos fibres.
- If remediation is undertaken then removal is preferred although encapsulation may be a cost-effective solution as well, particularly with cladding if it is in good condition.
- Disposal Options:
  - Local land disposal (burial) is preferred if it is locally acceptable and can be done without causing environmental problems.
  - Disposal at sea is legal in relation to the relevant conventions, provided the required conditions are followed, but is not the preferred option.
  - Export to other countries is acceptable but expensive. Australia and New Zealand are the preferred options and quite large amounts of asbestos waste have already been exported to New Zealand in particular.

Old Bitumen Tanks, Niue

Remedial Work Tendered for

- As a result of the survey it was decided to call tenders to carry out remedial work in the following countries:
  Cook Islands, Fiji, Nauru, Tonga, Vanuatu
- The remediation work chosen to be undertaken in the tendered work was selected as a result of a prioritizing exercise carried out on findings from the initial survey, and mainly focused on schools and hospitals.
- The Greek firm PolyEco Group carried out the tendered work in Cook Islands, Nauru, Tonga and Vanuatu
- The New Zealand firm Contract Environmental Ltd (CEL) carried out the work in Fiji. CEL was the company who also carried out the initial survey work.

Church in Aitutaki

Work Undertaken in Addition to Tendered Work

In addition to the tendered work, CEL carried out the following further work as part of the remediation phase:

- Cleaning up an asbestos contaminated site resulting from fire in an old hospital in Gizo
- Asbestos training and some removal in Kiribati
- Asbestos training in Nauru
- Carrying out an asbestos-contaminated soil investigation at the International School Suva (ISS). A major remediation exercise then followed that was funded by the ISS

Former Bulk Fuel Terminal, Vava'u

Lessons Learnt

- The tendering process was quite rushed. Better outcomes in terms of price and quality of work may have been achieved with longer timeframes.
- The work was not specified in detail at the tendering stage including the standard that needed to be achieved for asbestos management protocols.
- It should be necessary to prepare a detailed asbestos work plan for each project before starting. This plan should be made available to SPREP and also local environmental / health agencies on request.
- No independent assessment was carried out of the work done, including the need to have an independent asbestos clearance report.
- Local workers were widely used which proved cost effective and enabled skills to be transferred. It should be necessary, however, to prove that the local workers have been properly trained and equipped.
- Pre-start medical inspections should also be carried out on all local staff used.

Paul VI College Roof, Samoa

More Lessons Learnt

- Air monitoring should be carried out during the project and clearance air monitoring after job completion, in the cases of large projects or any projects involving friable asbestos
- Better coordination with local agencies is needed, and in particular, proper advance notice to affected stakeholders.
- Disposal methodologies need to be agreed with local agencies prior to commencing work and preferably at the tendering stage.
- In some cases of large jobs, visits may be needed to job-sites and further sampling may be needed.
- There needs to be a robust system in place for processing cost variations for unexpected problems.

Anetan Infant School, Nauru

Residential Work Still to be Done

- The remediation of all the residential sites in the Pacific would be very expensive - an approximate figure of $US40M.
- The problem of asbestos in residential sites needs to be addressed as effectively as possible, however, as it presents considerable potential for health problems.
- Training and education are needed, as well as more surveys, and possibly subsidies to address the worst situations.
- At least 80% of asbestos identified is contained in residential dwellings. This is often in deteriorating condition and people living in these dwellings are at real risk of contracting asbestos-related diseases
- A programme of testing cladding in residential dwellings would provide some clarity as to which houses are at risk. The programme should include clearly identifying visually which houses have asbestos roofs.
- At the very least, residential houses should be targeted by an awareness-raising campaign that aims to educate and set in place measures to reduce the risks of asbestos-related diseases where possible.

Niue House

Non-Residential Work Still to be Done

- A list was developed of non-residential Sites still to be considered for remediation in Stage Two of the PacWaste Project. This list was developed from the risk rankings assigned to the various sites. Privately-owned sites were excluded except for two high risk sites and three orphan sites. Costings were assigned to the individual projects and the total value of this work amounted to an estimated $US3.3M.

- Banaba sites were excluded due to the very high cost and logistical difficulties. A preliminary estimate is that the cost of removing asbestos from Banaba could be in excess of $US10M. It is also estimated that a detailed report that examines remediation methodologies and costings could be prepared for around $US80,000.

Bobotin Kiribati

Asbestos is Still for Sale in the Pacific in Hardware Shops

- Port Vila – Tested twice (2014 and 2018) and found to contain Chrysotile

- Gizo – Tested twice (2014 and 2017) and found to contain Chrysotile

Asbestos should be subjected to a Pacfic-Wide Ban as there is little point in a programme to remove asbestos if it can still easily be imported and used without controls.

Port Vila

Gizo