

SPREP

South Pacific Regional
Environment Programme



PROE

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Nauru POPs Project Country Plan **(Prepared by SPREP, January 2003)**

1. Introduction

The Australian Agency for International Development (AusAID) several years ago identified the mismanagement of hazardous chemicals in the Pacific Island Countries as a serious environmental concern, and hence the Persistent Organic Pollutants in Pacific Island Countries (POPs in PICs) project was developed as an AusAID funded initiative, to be carried out by SPREP. POPs are a group of twelve particularly hazardous chemicals that have been singled out by the recent Stockholm Convention for urgent action to eliminate them from the world. They include polychlorinated biphenyls (PCBs), which are mainly found in transformers, and several pesticides that are very persistent and toxic to the environment.

Phase I of the project involved predominantly an assessment of stockpiles of waste and obsolete chemicals and identification of contaminated sites, for 13 Pacific Island Countries. Other Phase I activities included education and awareness programmes in each country and a review of relevant legislation.

Nauru was a participant in Phase I of this work. A comprehensive report of this Phase I work was prepared and circulated, and significant quantities of hazardous wastes were identified in the countries visited, including estimated figures of 130 tonnes of PCB liquids and 60 tonnes of pesticides (although only about 3 tonnes of POPs pesticides). Many other hazardous wastes were also identified as well. In addition, quite a large number of contaminated sites were discovered, including six locations of buried pesticides. On the basis of this report, it was decided to proceed to the Phase II of the project, which involved the preparation of a more detailed inventory, and then collecting, transporting and disposing of the wastes, to a suitable Australian facility.

The first part (Component 1) of the Phase II work is now nearly complete, and has involved visits to each of the countries involved in the project, including Nauru, for detailed inventories to be carried out, including testing of all stockpiled transformers.

Other work was also carried out during these visits, including improving the temporary storage arrangements where necessary, and obtaining written agreement from each country for the project to proceed. A copy of the Nauru visit report is contained in Appendix 1 below.

The most significant conclusion found from this next stage of the work is that the estimated amount of PCB contaminated oils was far too high. Instead of the expected 130 tonnes, only 12.5 tonnes were found. This presented an opportunity to include additional wastes in the project, and it was decided to collect and dispose of all the pesticides, rather than only the POPs pesticides (as well as all the PCB transformer oils that were confirmed positive). A total of 50,265 kg of pesticides will now be dealt with, including 1825 kg of POPs pesticides and 6542 kg of unknowns, some of which may be POPs pesticides.

A full inventory of all pesticides and PCB contaminated oils was prepared in November 2002 as the basis for bid invitations to appoint an Australian Management Contractor (AMC) to carry out the rest of the Phase II work. As a result, the Australian company GHD Pty Ltd was appointed as AMC. GHD is expected to start work shortly and it is important that all countries agree to a confirmed plan for implementing the rest of the Phase II work. The wastes will all go to the BCDT / SRL Plasma plant in Narangba, north of Brisbane.

AusAID have engaged the Australian legal firm of Blake Dawson Waldron ("**BDW**") and instructed them to provide advice in relation to aspects of the POPs Project. As part of this process BDW has asked SPREP to obtain from participating countries some information as presented in Section 4 below.

2. Country Inventory

(It is possible that more wastes may be found in the categories below, prior to the time of pickup. If so, these could be added to the inventory, subject to negotiation with AusAID and the AMC.)

Nauru has the following **PCB Contaminated Oils** to be collected. All stockpiled transformers were tested with Dexsil Chlor-N-Oil 50 test kits and 9 initially tested positive out of 70 transformers (stockpiled at the NPC Bin #2, the old NPC Tank Farm, the old Od-N-Aiwo substation and the Port Harbour). The Dexsil kits test for all chlorine and not just chlorine in PCBs, so they are susceptible to "false positive" results. A total of one of the original 9 "positive" transformers was later confirmed as positive by Hills Laboratories in New Zealand.

Location	No of Transformers	Wt of Oil (kg)	PCB Conc (mg/kg)	No of Flushes	Total Waste Wt (incl Flushes) (kg)
Port Harbour	1	196	1050	4	980

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Nauru has no **Pesticides** to be collected.

3. Other Project Work

A visit was made to the cadmium slimes dump, which is a large area of land on Topside where a large quantity of cadmium rich wastes from an old phosphate processing plant had been dumped. The Phase 1 Report indicated that cadmium levels in the dump were as high as 500ppm but were not mobile. A composite soil sample and a composite leaf sample were also collected and sent for analysis. The results of the analyses were as follows:

Cadmium Slimes ground sample: 215 mg/kg dry weight

Leaves: 6.23 mg/kg dry weight

Analyses of leachate samples would be needed, to establish the mobility of the cadmium, but it is clear from the above that cadmium is being picked up in the vegetation growing on the dump.

The Phase 1 report had listed several unwanted chemicals, mostly in drums, in the old Dangerous Goods Store. The NPC storeman advised that these materials had all been dumped and the only unwanted materials he had were the drums of grease stored on Topside. These drums were inspected and about 100 drums of grease were discovered. The grease contained 1,1,1-trichloroethane, and the drums were badly corroded, so that much of the grease had spilled out. This material is a chlorinated organic and should be properly contained and eventually removed for disposal if it has no further use.

The Secondary School reported that all their old chemicals had been sent to the Dept of Education. A visit to the Dept of Education revealed that these chemicals had all been dumped, although no one knew where. Efforts to establish whether there were stockpiled chemicals at the hospital also proved fruitless.

4. Domestic Laws on Collection, Packaging, Transportation and Export of Hazardous Waste

AusAID have engaged the Australian legal firm of Blake Dawson Waldron ("**BDW**") and instructed them to provide advice in relation to aspects of the POPs Project. As part of this process BDW has asked SPREP to obtain from Nauru (as well as all other participating countries) the following information:

- a) What are the legal responsibilities in Nauru for persons involved in collection, packaging, transportation and disposal of hazardous wastes and who are those responsibilities allocated to by the laws in Nauru.
- b) Who is the owner of the hazardous wastes in Nauru.
- c) Does Nauru have domestic legislation which allocates responsibility for POPs waste during collection, packaging and export? If so, how is this responsibility allocated? Please consider that liability and responsibility may arise from:
- requirements to comply with clean-up notices or Government directions relating to the waste;
 - requirements to meet safety, environmental and other standards in relation to the waste; and
 - requirements to compensate others for damage to property, human health or the environment.
- d) Does Nauru have a domestic policy in relation to providing or withholding consent under the prior informed consent provisions of the Waigani Convention (Article 6) for:
- Nauru
 - any other Pacific Island Countries planning to 'transit' wastes through Nauru.
- e) Has Nauru developed a national hazardous waste management strategy in accordance with Article 4(4)(e) of the Waigani Convention? If so, how is the strategy relevant to:
- the collection, packaging, transportation and exportation of POP waste; and
 - responsibility for and ownership of the POP waste at each of the steps in (i).

Should you have any enquiries, please contact the following relevant Blake Dawson Waldron staff, Tony Hill on (02) 9258 6185 or Joanna Perrens on (02) 9258 6401 in Sydney, Australia.

5. Discussion

There is one transformer that was confirmed positive for PCBs. This transformer contained 196 kg of oil or 230 litres at 1050 mg/litre of PCBs. If it is decided to flush out the transformer and leave the carcass, then a total of 980 kg of oil plus flushing liquid will be produced, or 1152 litres. This will need a total of 6 x 200 litre drums. If it is decided to take the oil plus carcass, an even smaller space will be needed in the container.

Nauru has no pesticides, so there will be considerable space left in the container. To bring back any other waste would, however, need a deviation from the established AusAID policy, regarding what can be included in the project, as well as extra funding.

The total number of drums needed is therefore approximately 6 drums, so one container will be more than sufficient.

A staging location will be needed for the container, and the obvious location is the Port Harbour, as this is where the PCB contaminated transformer is located and also where the container will be picked up and taken to the ship.

It is also important that consent procedures are in place to process the application from GHD to Nauru to export the waste. Nauru has ratified the Basel Convention (but not the Waigani Convention), and needs to be ready to handle effectively, the export application, including any appropriate public consultation processes. SPREP plans to hold a workshop soon to assist countries with this consent process.

The impact on the public in Nauru should be minimal, provided everything is organized and implemented according to a well-designed management plan. The local transport routes and movement times will be part of the plan, and the only risk of public exposure will be if some incident occurs during this local transport, which leads to a spill. The basis of the management plan should be communicated to the public effectively via radio, and printed media, but not in an alarmist fashion, as the risk to the public is very low.

The trichloroethane grease stored at Topside should be cleaned up and repacked under cover, until it can either be used or disposed of satisfactorily. The cadmium slimes dump should be monitored visually and eventually may be able to be investigated more fully.

6. Conclusions

1. Nauru has one PCB contaminated transformer containing 196 kg (230 litres) of contaminated oil.
2. Nauru has no unwanted pesticides for disposal.
3. A total of only 6 drums will be required, which will fit easily into one 20 ft shipping container.
4. Nauru has a large area of land on Topside that is contaminated with cadmium rich processing waste.
5. Nauru also has about 100 badly corroded and leaking drums of a grease containing 1,1,1,-trichloroethane.

6. Attempts were made without success to identify stockpiles of other used chemicals. Such stockpiles may still exist, however.

7. Actions

1. The transformer for collection should be isolated and secured.
2. A local management plan will need to be prepared for all local operations, including the determination of the location of the container while the collection operations are going on. This plan will need to address such issues as local transportation arrangements, local contact focal point, and the best way of carrying out consultation with the Nauru public on the local implementation of the project. This plan needs to be developed in conjunction with the AMC.
3. Local systems need to be put in place to ensure effective processing of the application from the AMC to export hazardous waste from Nauru to Australia. This application will be lodged under the Basel Convention. A SPREP workshop is planned for April to assist countries with these procedures, and a Nauru representative should attend this workshop. (Financial assistance will be provided.)
4. Advise NPC of the results of the PCB analyses and also the cadmium analyses.
5. Note the need for further investigations into the environmental impact of the cadmium slimes dump. This should be done as soon as a suitable opportunity arises, which will probably be during the preparation of the National Implementation Plan (NIP) for the Stockholm Convention. Substantial funding is available from the GEF for the preparation of the NIP.
6. Tidy up as much as possible and relocate in a contained covered area the badly corroded drums of trichloroethane on Topsiside.
7. Continue to safely stockpile any used chemicals that are not to be picked up by the current AusAID project. It would be appropriate to find a suitable central locked storage area with proper shelving for these chemicals, and also to ensure that proper segregation of incompatibles (e.g. acids and alkalis, oxidizers and reducers, acids and cyanides) is achieved.
8. Provide SPREP with appropriate responses to the BDW questions regarding Domestic Laws on Collection, Packaging, Transportation and Export of Hazardous Waste

Appendix 1

REPORT OF THE VISIT OF JOHN O'GRADY AND MELCHIOR MATAKI TO NAURU FOR THE POPS PROJECT

Monday 16 September

John O'Grady could not get to Nauru for a few days because of visa problems. Melchior Mataki went ahead and carried out the following activities.

Melchior arrived in Nauru checked into the hotel and got a ride with the hotel staff to the Nauru Department of Economic Development (DED). He met up with **Mr. Tyrone Deibe** and briefed him about the trip. He advised Tyrone that in the first three days he will focus on the unused transformers initially identified in the Burns et al, 2000 report.

Melchior gave him Tyrone the LOA (Letter of Agreement) and he promised to make arrangements with Secretary of his Department to have it signed before the end of the week. An office space was arranged for Melchior to sit in and **Mr Roxen D. Agadio** (Environment Officer) was assigned to be his assistant for the work. The above person had to use his own car for our transport given the shortage of Government vehicles. However, in the afternoon after much waiting, a Government pick up was allocated.

Melchior had a meeting with **Mr. Tim Aigimea** (Acting Utility Superintendent) at the Power station. He advised that a number of old transformers have been shifted to the NPC "tank farm" and this was checked and less than 15 were found there. He also advised that a number of the old transformers have been dumped at the tip at Topside (this will be visited tomorrow). Tim Aigimea advised that the transformer oil used in their current units are PCB free and are reused after a regeneration process.

We checked out the NPC Bin 2 (storage of wrecked utilities) and confirmed the presence of a large number of transformers (initially identified in the Phase I Report). The building is readily accessible to the public and is littered with old engines parts, unused electrical cables and transformers. A number of the transformers were leaking and some were empty and have had their copper coils taken as scrap metal. The storage bin had badly corroded.

Tuesday 17 September

Melchior Mataki tested a total of 30 old transformers in the NPC Bin 2, with two giving positive results (these two were tested again on the 19/9/02 and gave negative results). Samples for both transformers were collected.

A number of the transformers have had their lids taken off but the oil was still intact and thus tested. Several other transformers were found empty or filled with water.

Wednesday 18 September

Melchior Mataki had a new assistant today from DED namely **John Raige**, as Roxen Adagio had to attend to some other duties. In the morning, a further 10 transformers at the NPC Bin #2 were tested and all of them registered PCBs levels less than 50 ppm. At the NPC Bin #2, there were 27 empty or water filled transformers lying about the area. From the level of oil present on the floor, it is very likely that they have leaked whilst in storage. Six other transformers could not be tested because of the difficulty in opening up the tap and the fact that all the top bolts were badly corroded and rusty. Due to the time constraints we then went up and tested the rest of the transformers at the NPC tank farm and decided to come back to the “difficult ones” at Bin #2 later.

In the afternoon, 10 transformers at the tank farm were tested and all of them registered less than 50 ppm of PCBs. Some of the transformers were overgrown with weeds. There is also a significant amount of oil on the surrounding areas. The area is also freely accessible to the members of the public, although the NPC Tank Farm Security personnel control the southern end entry. There were 3 empty transformers and 2 were not tested because of the difficulty in access into the transformers, so these ones will be tested later.

In mid afternoon, a trip was made to the Topside tip (rubbish dump). The dump is situated on the higher portion of the island and was not fenced, although there were some posts of a former fence still standing. The tip received all types of solid waste ranging from domestic waste to engine parts and cans of beer and soft drinks. There was no evidence of partial ground covering of the rubbish. During the visit, the entry to the tip was blocked with solid waste and parts of the tip were on fire. There were no transformers found on our trip to the dump. However on a second trip (19/9/02) to the tip, the access to the tip was cleared and a bulldozer was on site to move the solid waste around allowing for space and partially covering the solid waste.

Adjacent to the tip was a site dedicated to the “temporary” storage of scrap vehicles and equipment ranging from defunct household appliances, corroded metal tanks to engine parts were on this area. Upon further observation, more than 40 drums of bitumen were piled at a slope near the scrap metal storage. Some of the drums were badly corroded and their contents have oozed and formed a “goosey” pool around the pile of drums. John Raige later told Melchior that a number of bitumen drums were also dumped around the Island. Furthermore, outside of the NPC tank farm (current fuel depot), there were two pools of waste oil and more than a dozen drums with labels (Castrol oil) were lying beside the embankment. The oil may have been intentionally released to the ground.

In the late part of the evening, Melchior made a trip around the Island and generally observed the numerous old and corroding vehicles in the residential areas. On further observation and questioning of some residents, there seemed to a lot of “home garages”. Opposite to the Od-N-Aiwa Hotel there is a repair shop that had old fridges and washing machines outside of it, and there seemed to be no concern on the part of the repair shop owner to properly store the above items.

Thursday 19 September

John O'Grady arrived in Nauru at 8am, checked in to the hotel and went to the Dept of Industry and Economic Development. Met **Joseph Cain, Secretary for Industry and Economic Development**. We discussed the POPs in PICs project, including how we might best spend our time in Nauru and who we should meet. We also discussed the Stockholm and Waigani Conventions.

We met **Warwick Harris, Chief Quarantine Officer**. They had some pesticides they were using for fruit fly control, and the Dept of Health had some malathion for mosquito control, but there were no old stockpiled pesticides for disposal. This conflicts to a certain extent with the information in the Phase 1 Report, which reported 100kg of excess pesticides. Warwick Harris told us that all excess chemicals from the fruit fly project have been taken away by the SPC.

We visited the NPC Bin #2 and retested the two transformers that had tested positive yesterday. They both gave negative results, but we decided to send the samples collected yesterday for further testing. Two of the 6 remaining transformers at the NPC Bin 2 were tested and one of them tested positive and a composite sample was collected. The remaining ones will be completed on Saturday. The old PWD workshop was checked and it did not have any transformers. Two transformers at the old sub-station opposite Od-N-Aiwo hotel were tested and both of them registered positive levels of PCBs with the test-kits.

Tried to find the NPC Dangerous Goods Store, but it had closed down. Made arrangements to meet the storeman next day.

Tim Angimea of NPC advised us how to find the cadmium slime dump so we went and inspected this dump. We also collected a composite soil sample and a composite plant sample. The Phase 1 Report indicated that cadmium levels in the dump were as high as 500ppm but were not mobile.

We terminated our work in the afternoon by taking a ride around the Island to check for any other old transformer sub-stations.

Friday 20 September

We met with **Tyrone Debye, Project Officer for the Department of Industry and Economic Development**, and arranged for the signature of the Nauru LOA by Joseph Cain.

We visited the Secondary School and discovered that all their old chemicals had been sent to the Dept of Education. Went to the Dept of Education and found that these chemicals had been dumped, although no one knew where.

We then tested 12 old transformers at NPC near the Port Harbour, with two testing positive with the testkits. There was some evidence of spillage of transformer oil around the old transformers.

We met the NPC storeman, and he advised that the contents of the old Dangerous Goods Store had all been dumped. He said that the only unwanted materials he had were the drums of grease stored on Topside. We then went for a drive up to topside and inspected the approximately 100 drums of grease. The grease contained 1,1,1-trichloroethane, and the drums were badly corroded. Much of the grease had spilled out.

Tried to meet the laboratory manager at the hospital to enquire about old stockpiled chemicals, but we had no luck.

Saturday 21 September

We tested the remaining transformers in the NPC #2 bin and at the tank farm.

Tried again to find the laboratory manager at the hospital with no luck.

We sent off the 8 “positive” transformer oil samples, plus the cadmium slimes soil and leaf samples, to New Zealand by TNT.

Monday 23 September

We flew to Fiji (Nadi International Airport) and drove all the way from Nadi to Suva.