Headquarters
New Zealand Defence Force
Defence House
Private Bag 39997
Wellington Mail Centre
Lower Hutt 5045
New Zealand

OIA-2026-5753

30th April 2026

[redacted]

Dear [redacted]

I refer to your four emails of 3 April 2026 to the Ministry of Defence requesting, under the Official Information Act 1982 (OIA), information related to potential health risk assessments associated with a range of deployments with the New Zealand Defence Force (NZDF). As advised, your requests were transferred to the NZDF on 7 April 2026.

You asked the following questions with regard to the prevalence of sarcoidosis in the NZDF.

1. *The number of uniformed New Zealand Defence Force personnel diagnosed with sarcoidosis, recorded in NZDF medical or personnel systems, from 1 January 2000 to the present.*
2. *If available, please break the figures down by*
   a. Service: Army, Navy, Air Force
   b. Force type: Regular Force and Reserve Force
   c. Status: currently serving personnel versus released or medically discharged personnel
3. *If any of the requested breakdowns are not held, please provide the closest available fields and explain any limitations, such as periods where records are incomplete or not digitised. If different systems must be used for different periods, please identify the system used for each period.*
4. *Please provide the information as a spreadsheet file in CSV or XLSX format. Deidentified aggregate counts are sufficient. No personal information is sought.*

The NZDF's Health Management Information System (HMIS) was introduced to camps and bases between 2005 and 2007. Data is not available prior to the introduction of the HMIS.

A total of 19 personnel have a diagnosis of sarcoidosis recorded on HMIS. Of these, 10 are currently serving and nine have been released. Service details are only available for currently serving members as per the below table.

Service	Regular Force	Reserve Force
Army	5	0
Navy	0	1
Air Force	4	0

With regard to your requests about health risk assessments for deployments to Bougainville, Somalia, and Timor-Leste, an extension is required to the time to make a decision to 2 July 2026. This is necessary because a manual search of the hard copy files is required, and meeting the original time limit would unreasonably interfere with regular NZDF business.

You have the right, under section 28(3) of the OIA, to ask an Ombudsman to review this response and the decision to extend the timeframe. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Please note that responses to official information requests are proactively released where possible. This response to your request will be published shortly on the NZDF website, with your personal information removed.

Yours sincerely

GA Motley
Brigadier
Chief of Staff HQNZDF

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New Zealand

OIA-2026-5753

15th July 2026

[redacted]

Dear [redacted]

I am writing further to my response of 30 April 2026, regarding your requests under the Official Information Act 1982 (OIA) in relation to potential health risk assessments associated with deployments to Bougainville, Somalia, and Timor-Leste.

A manual search of New Zealand Defence Force (NZDF) hard copy files was undertaken and relevant documents are enclosed. Where indicated, information is withheld under section 6(a) of the OIA in order to avoid prejudice to the international relations of the Government of New Zealand. Both documents concern chemical material at Loloho, Bougainville.

There was no documentation concerning specific environment hazards for locations in Somalia or Timor-Leste. General environmental problems were noted in reconnaissance reporting, for instance: high temperatures, water diseases, local poor sanitation, etc.

Again, you have the right, under section 28(3) of the OIA, to ask an Ombudsman to review this response. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Please note that responses to official information requests are proactively released where possible. This response to your request will be published shortly on the NZDF website, with your personal information removed.

Yours sincerely

GA Motley
Brigadier
Chief of Staff HQNZDF

Enclosures:
1. Report on the Hazardous Chemicals Situated in the Loloho Area
2. New Zealand Liaison Officer Weekly Report Op Belisi

1. → DNS. I think we need to file this somewhere DAOT. 30-11-98

3130/PNG/ (31)

REPORT ON THE HAZARDOUS CHEMICALS SITUATED IN THE LOLOHO AREA

References

A. HQNZDF Ops SIC I8A of 1000551Z Mar 98

B. HQTMG SIC I8A of 050300Z Mar 98

C. Fogg letter dated 22 Nov 97

DAOT Have a look at this. It's 'hush hush'! 5/5

Introduction

1. Bougainville Copper Limited (BCL) mined copper from the Panguna mine in Bougainville up until 1989, when the Bougainville crisis began. The ore was extracted by open-pit mining at Panguna and then transported to Loloho for processing where it was crushed and ground, concentrated by flotation, following addition of air and "frothers" and then smelted with the addition of lime and silica fluxes; and lastly freed of sulphur and iron in a converter. Many hazardous chemicals were used in this process.

2. The operation of BCL was well set up from a safety point of view. The chemicals management plan appeared to be well thought out and adequate. The present problem has arisen because of the breakdown of this management plan since the company left nine years ago. Additionally, many of the chemicals storage facilities are being interfered with by the local population now that the cease fire has made it safe to do so.

3. As detailed in Reference A, the recce party identified the presence of chemical substances in the Loloho area, but did not consider that they posed a hazard to TMG personnel. Following an inspection by the TMG EHO, Flt Lt T. Hopkins, HQ TMG expressed continuing concerns of the hazards posed by the chemical substances (Reference B) and requested advice from a qualified OSH/ hazardous chemicals adviser. Accordingly Capt D. Stannard was sent to Bougainville over the period 18 - 25 Mar 98.

4. The terms of reference included the following:

a. conduct a site survey,

b. determine type, quantities, and conditions of hazardous substances,

c. take samples of unknown hazardous substances for further analysis on return to New Zealand,

d. assess any long/short term effects upon personnel and the environment; and

e. assess the effectiveness of the present control measures.

Area One

5. Area one is the area adjacent to the main entrance to Loloho wharf (photo 1).

Chlorine gas

6. Seven 70 kg cylinders of chlorine gas were found unsecured in the storage shed (photo 2). The valves were found to be quite rusty (photo 3). Three cylinders appeared to be full and the rest appeared to be empty.

7. Five 70 kg cylinders of chlorine gas were found at the cylinder storage area (photo 1). All the cylinders appeared to contain chlorine gas.

8. Two 920 kg cylinders were found lying on the ground next to the cylinder storage area (photo 1). Valve covers were still attached but one cover appeared quite rusty.

9. **Hazards.** Chlorine gas is extremely corrosive, causes burns, and is toxic by inhalation and through the skin. It has been used as a chemical weapon in the past. It is a strong oxidiser and contact with combustible materials may cause fire. There is also a mechanical hazard present in that there is a potential for the cylinders or valves to be punctured or hit, thereby releasing the gas much like letting go of a balloon, and therefore creating an unguided missile which is also spewing out a toxic gas.

10. **Intervention.** All cylinders were tested with ammonia solution and none were found to be leaking. All the smaller cylinders were moved to the cylinder storage area and secured upright with chains. The cylinders storage area has been roofed and a fire break, barrier, and hazard signs have been placed around the cylinders.

11. **Storage requirements**. The smaller cylinders need to be stored up-right in a well ventilated, dry area away from sources of heat and ignition. They are to be kept away from strong reducing agents, organic materials, and combustible materials.

12. **Disposal.** Cylinders need to be returned to supplier for disposal.

13. **Risk assessment.** The risk of chlorine leaking is low unless a cylinder is breached e.g. a vehicle backing into one. The risk of this happening is low as the site is out of bounds to TMG personnel and has a barrier around it. The risk of fire is also low and the fire break helps towards this. There is still the danger of intervention by the locals, as this could increase the level of risk.

Chromium trioxide (Chromic acid)

14. 58 drums (50 kg each) of chromine trioxide were found in the storage shed (photos 4 and 5). Of these, 20 were damaged and one had no lid and was leaking (photo 6). Some of the trioxide had reacted with water to form an acidic solution. A puddle of approximate dimensions of 10 x 8 m^2 was found pooling over the concrete floor. This puddle was semi-sheltered from the rain. Sawdust (approx 0.5 m^3) had been used to contain one side of the pond (photo 7). A further area of contaminated gravel (10 x 6 m^2) was found at the entrance to the building.

15. **Hazards.** Chromium trioxide is extremely corrosive and a strong oxidising agent. It causes severe burns, ulcers and is a confirmed human carcinogen (cancer causing agent). It also may cause fire or react violently with flammable or combustible materials such as sawdust.

16. **Intervention.** Clean dry sand was used to contain and absorb the spill. The area was designated out of bounds to TMG personnel and a barrier placed around the shed. Hazard signs were put up.

17. **Storage requirements.** The acid is to be kept in securely sealed containers and stored in a cool, well ventilated area. It is to be kept dry, away from sunlight and away from flammable or combustible materials.

18. **Disposal.** Recycling of the uncontaminated product is possible. Meta-bisulphite can be used to reduce the Cr (VI) to Cr (III), the product neutralised with lime, and the sludge reclaimed. The residue can be buried in a properly designed landfill.

Sodium Chromate

19. Three 50 kg bags of sodium chromate were found in the storage shed (photo 8) although a total of six bags were reported in the initial report. It is presumed that the locals have moved them, but there present whereabouts is unknown. All of the packets discovered were found to have ruptured and there was a small quantity of the chromate on the concrete floor. Some of this had mixed with sawdust.

20. **Hazards.** Sodium chromate is extremely corrosive and a strong oxidising agent. It causes severe burns, ulcers and is a confirmed human carcinogen (cancer causing agent). It also may cause fire or react violently with flammable or combustible materials such as sawdust.

21. **Intervention.** Clean dry sand was used to contain and absorb the spill. The sodium chromate was segregated from the other chemicals in the shed.

22. **Storage requirements.** The chromate is to be kept in securely sealed containers and stored in a cool, well ventilated area. It is to be kept dry, away from sunlight and away from flammable or combustible materials and strong acids.

23. **Disposal.** Recycling of the uncontaminated product is possible. Disposal advice for the contaminated sand will need to be sought from the manufacturer.

Alum Sulphate

24. 75 x 25 kg bags of alum sulphate were found in the storage shed (photo 9) although a total of 80 bags were reported in the initial report. It is presumed that the locals have moved them, but there present whereabouts is unknown. Some of the bags had split and were leaking on to the concrete floor.

25. **Hazards.** Alum sulphate may cause damage to eyes, drying of the skin leading to burns, and is irritating to the respiratory tract. It may decompose to produce toxic/ corrosive fumes when heated.

26. **Intervention.** The spill was cleaned up and the substance was moved to the far end of the shed, away from the other chemicals..

27. **Storage requirements.** Keep dry and away from alkalis, aluminium, galvanised metal, oxidising agents, and chemicals readily decomposed by acids eg cyanides, sulphides, carbonates.

28. **Disposal.** Disposal advice will need to be sought from the manufacturer.

29. **Risk assessment for area one storage shed.** The locals wish to use the shed as a store for their coconuts and have been moving the chemicals around and building rooms. Despite signage, barriers, MIST interaction, and visits by local chief representatives, they persist in disturbing the site. The level of risk is directly proportional to interference by the locals. The risk is low to TMG personnel directly, apart from toxic fumes produced if there was a fire, but high to the locals. It is also high indirectly to TMG personnel e.g. to medical personnel treating affected locals, and public relation issues. The MPs have been tasked to patrol the area daily.

Area Two

30. Area two is the area in front of the Loloho BCL office (photo 10).

Methyl Isobutyl Carbinol (MIBC)

31. Five 62 000 imp gallon tanks of MIBC were found in this area (photo 11). The tank gauge readings were as follows (from north) 9 000, 20 000, unreadable, 24 000, unreadable, imperial gallons. All tanks appeared intact and in reasonable condition.

32. **Hazards.** MIBC is extremely flammable and toxic through inhalation and skin contact.

33. **Intervention.** Nil.

34. **Storage requirements.** Leave in tanks. Check tank integrity regularly.

35. **Disposal.** Disposal advice will need to be sought from the manufacturer.

36. **Risk assessment.** The risk is low provided there is no interference from locals. There is a potential risk of fire but creating a fire break would probably only bring attention to the MIBC. The area will need to be checked regularly to re-evaluate the risk.

Area Three

37. Area three is the bulk storage area across the main road from the Loloho wharf (photo 12).

Hexamine

38. Approximately 300 pallet loads of hexamine were found (photos 13 and 14). Many of the bags were split and blocks of hexamine were strewn across the floor (photos 15 and 16). The locals had started removing the walls of the shed at the end of February and this had exposed the hexamine to the elements (photo 17). Consequently there was a pool of water on the floor and the hexamine was decomposing. This was evident by the strong fumes in the building.

39. **Hazards.** Hexamine is flammable and the dust is capable of causing skin sensitisation and respiratory discomfort. Hexamine dissociates in water releasing formaldehyde and ammonia. Formaldehyde is toxic by all routes, causes burns, and may cause cancer long term. It is also highly flammable. Ammonia is irritating to the eyes and respiratory system and may cause burns.

40. **Intervention.** A fire break was placed around the building where possible. The area has had danger signs attached and has been visited by MIST, and local chief representatives.

41. **Storage requirements.** Hexamine should be stored in a cool, well ventilated, dry place away from any source of heat or ignition.

42. **Disposal.** Hexamine can be buried or incinerated at an approved site in small quantities at a time.

43. **Risk assessment.** There is a risk of the hexamine catching fire. As TMG personnel are banned from the area, this risk would depend on the locals use of the site. The area will need to be checked regularly to re-evaluate the risk.

Unknown substance

44. A white, granular, solid was found in 11 x 20 ft ISO containers (photo 18) . Many of the containers were damaged and the substance had poured out (photos 19). A yellowish, plastic looking surface resulted. This substance dissolved in water to give a clear paste-like solution with a resultant pH of 5-6. There was no significant reaction with either a weak acid (vinegar) or weak base (sodium bicarbonate). The substance burned reluctantly leaving a black residue. Sample was taken for further analysis upon return to New Zealand.

Area Four

Sodium Isopropylxanthate (SIPX)

45. Approximately 200 x 200l drums of SIPX was found approximately 300 m north of the PNGDF base north of Loloho (photo 20). An exact count was not done because of the hazardous nature of the area. Some of the SIPX had been removed from the metal drums and was spilling out of the plastic liner (photo 21). Other metal drums were rusted through, exposing the SIPX to the elements (photo 22). Some of the SIPX was lying in pools of water inside the building (photo 23) and some was lying in pools outside. There was a strong chemical smell, particularly within the building.

46. **Hazards.** SIPX is harmful upon contact with skin and toxic if inhaled. There are also the dangers of cumulative effects. Contact with water liberates toxic, highly flammable carbon disulphide. This is spontaneously flammable in air.

47. **Intervention.** Signage was erected to warn off personnel. MIST has been informed and have viewed the site. PNGDF and local representatives have been informed. This area is out-of-bounds to TMG personnel.

48. **Storage requirements.** Store in a suitable metal container in a cool, dry, well-ventilated space away from sunlight and any source of heat or

ignition source. Keep away from oxidisers, acids, combustible materials, phosgene, and sulphur chlorides.

49. **Disposal.** Disposal advice will need to be sought from the manufacturer.

50. **Risk assessment.** The risk is low to TMG personnel directly but high to the locals and the PNGDF. There is a very high risk that this substance will spontaneously ignite. The risk is also high indirectly to TMG personnel e.g. medical personnel treating affected locals, and public relation issues.

Area Five

Calcium Hydroxide

51. 22 stacks of 750/1000 kg bags of calcium hydroxide were found in the area just to the north of the Opera House (photos 24 and 25). Most of these bags were exposed to the elements (photo 26). Calcium hydroxide readily absorbs carbon dioxide from the atmosphere to form calcium carbonate. In view of the length of time that this compound has been exposed to the elements, most of it should have converted. Random samplings were taken of the bags and this was found to be the case. However, the interiors of the bags may still contain the hydroxide.

52. **Hazards.** Calcium hydroxide is an alkali and is irritating to the eyes and may cause burns to the body. Calcium carbonate when wet is relatively harmless but may be irritating to the eyes and skin in sensitive people.

53. **Intervention.** Nil

54. **Storage.** Keep dry and avoid storage with ammonium salts, acids, and aluminium or galvanised containers.

55. **Disposal.** Bury in an approved landfill.

56. **Risk assessment.** This is a low risk to all personnel.

Area Six

Polychlorinated Biphenyls (PCBs)

57. In Reference C, Dr Fogg described the storage of approximately 1320 gallons of PCBs in the Arawa region. Dr Fogg was adamant that the PCBs were still in the area. Flt Lt T. Hopkins did a very limited ground search but could not find anything.

58. **Hazards.** Although PCBs are harmful acutely, the greater danger is posed by the long-term hazard. PCBs accumulate in the environment (and food chain) in much the same way that DDTs do. They cause problems with the reproductive and immune systems, liver, and are carcinogenic. They are an extremely significant environmental hazard.

59. **Intervention.** A full aerial survey of all likely places could not be undertaken because of no-flying-zone restrictions imposed (a couple of hours earlier, a civilian helicopter had been shot at even though it was flying within the area). However, a limited survey was done and photos taken for later analysis. Ground survey are difficult because of the height of the vegetation and the possible presence of bobby traps and mines.

60. **Storage.** Store in a metal drum in a well-ventilated area away from oxidisers and chlorine. Check regularly for leaks and spills. Do not let PCBs be released into the environment.

61. **Disposal.** Disposal is by high temperature incineration. There is no suitable high temperature incineration facility in Australia presently. Public pressure stopped PCBs being incinerated in the Golden Bay Cement Works in New Zealand recently. The French have incinerated PCBs in the past.

62. **Risk assessment.** The risk to locals and TMG personnel is unknown as no testing of the levels of PCBs have been done as of yet. The risk to the environment if these PCBs can be confirmed to exist, is extreme.

Area Seven

63. Area seven is the area within and around the power station (photo 27 and 28).

Fuel Oil

64. Three x three million gallon fuel tanks were found (photo 29). They are believed to have low sulphur fuel oil in them (local information). The tank closest to the power station is full and the rest are believed to be as well. They were not surveyed because of the risk of mines and bobby traps. If the oil was set on fire, it would release a black, toxic smoke similar to that in Kuwait after the Gulf War. This would be difficult to put out with the present resources in the area. Fortunately it is difficult to ignite and therefore the risk is low. If the tanks leaked, it would cause major damage to the environment. The condition of the tanks need regular checking.

Storage tanks

65. Two additional storage tanks believed to contain diesel (local information) are situated adjacent to the fuel tanks (photo 29). They were not surveyed because of the risk of mines and bobby traps. The condition of the tanks needs to be ascertained.

Laboratory

66. The laboratory located inside the station has been demolished (photo 30). Reagents are scattered across the laboratory and most of the equipment has been smashed. There is a strong smell of acids in one area and amides in another. Mercury is scattered across the floor (photo 31) and there are two x-ray sources for the x-ray spectrometers visible (photos 32 and 33), condition not determined. This room should not be entered and has been signed as such.

Halon

67. Gas cylinders containing halon were found in a shed outside the station (photo 34). As long as this is not disturbed, it should not be a problem in the short term. The cylinders should be checked periodically to assess their condition.

PCBs

68. The transformers within the station are labelled that they contain PCBs (photo 35). Some appear to be drained.

Glass fibre

69. Glass fibre was found strewn across the floor (photo 36). Glass fibre is hazardous by inhalation and through the skin. It is classified as a possible human carcinogen.

Asbestos

70. Asbestos was found near the evaporators (photo 37). It had been used as an insulator for the heating pipes. This has been exposed in several places. Because of the lighting, the colour could not be determined. Asbestos is toxic by inhalation and may cause cancer.

71. Risk assessment. The risk is low to TMG personnel directly as TMG personnel are banned from the area but high to the locals. The locals are presently scavenging within the station. The risk is also high indirectly to TMG personnel e.g. medical personnel treating affected locals, and public relation issues. The risk of environmental damage from the leakage of fuels is low presently but will increase as the tanks deteriorate and the locals interven

Area Eight

72. Area eight is the Shell site, across the bay from the Loloho wharf (photo 38). Since this site was at a distance from the wharf and populated areas, a cursory survey only was undertaken. A local was observed scavenging in the building during the survey.

Liquid propane

73. Two large cylinders were found labelled liquid propane. Propane is a highly flammable gas, may also cause cold burns. There are also the mechanical hazards associated with cylinders under pressure. The condition of the cylinders was not checked.

Oils and Greases

74. A variety of oils were found. There was a large quantity of different types of grease spilt over the ground (photo 38). These tend to be irritating to the skin. They are flammable, but are hard to ignite. They do, however, pose a risk to the environment if spilt or burnt.

75. **Risk assessment.** The risk is low to TMG personnel. The risk to the locals will be directly proportional to their intervention. The risk to the environment will depend on this intervention and also increase as the containers deteriorate. There is already damage to the environment from the greases.

Area Nine

76. Area nine is the wharf area (photo 39).

PCBs

77. The transformer on the wharf appears to be drained (photo 40). It is unsure when this was done. It is possible that this contained PCBs. A soil sample was taken for later analysis. A barrier has been placed around the area and it has been signed.

Oxygen cylinders

78. 27 oxygen cylinders were found on the wharf (photo 41). They are stored under cover and secured in pallets. They are a low risk presently but the cylinders will be deteriorating with age.

Unknown substance

79. Three containers of what appeared to be the same substance as that found in area three, are on the wharf.

80. **Risk assessment.** The present risk is low but this will increase with time..

BCL chemical list

81. Paul Coleman, Secretary of Rio Tinto Minerals (PNG) Pty Ltd (parent company of BCL), has sent a list of fifteen reagents and hazardous materials stored at Loloho (Enclosure two). Four of these chemicals have been found. He also made a verbal statement to Rhys Puddicomb and Capt Stannard, that BCL would possibly be prepared to fund the disposal of the hazardous substances. This would have to be done by an outside agency as BCL would not step foot on Bougainville. This was to be discussed at the Board of Directors meeting on 25 Mar 98.

General Interventions

82. As part of the general interventions, Commander TMG has been briefed on the chemical hazards. OC HQ LST has also been briefed and is incorporating emergency procedures and evacuation into standing orders. The medical team have been briefed on procedures to be followed in a chemical emergency and medical interventions for each of the chemicals. A decontamination area has been set up next to the hospital and training has been undertaken for suitable personnel how to respond to a chemical emergency, decontamination procedures, and the use of chemical protection suits. Various types of chemical protection suits, including one full protection suit with breathing apparatus, have been left for the medical team. This equipment is *only suitable for use for rescuing personnel.*

Discussion

83. A material safety data sheet database on a CD Rom was used for this survey. Without it, the survey would have been very difficult to do. A formal proposal has been put forward to HQ NZDF to purchase such a system.

84. The reconnaissance party identified the presence of chemical substances in the Loloho area, but did not consider that any of these posed a hazard to TMG personnel (Reference A). It is unknown what qualifications that the reconnaissance party possessed to state this or whether they sought any advice from a hazardous chemical management specialist.

85. Exposure of personnel to hazardous chemicals is not unique to Op Belisi. In Op Radian, the deployment was to an area used for treating and preserving timber. No testing was done to determine if the chemicals posed a danger to personnel. The long term repercussions from this are unknown at this stage. The repercussions from Agent Orange, and Gulf War Syndrome after Op Fresco, are being felt now. Future operational

deployments are also likely to encounter hazardous chemicals, especially with peacekeeping missions (e.g. UNSCOM).

86. At present within Defence, there is only one military person who is qualified in hazardous chemical management. He is leaving at the end of the year. An Occupational Hygienist needs to be employed to fulfil this, and other needs. This was also recommended by the Ministry of Defence Audit in 1996. Defence has a responsibility to ensure that personnel are not exposed to any more hazards than are necessary to do the job.

87. Equipment was sought from RNZE to support this survey. This logistic support was given at very short notice but it highlighted some problems. There appears to be no formalised approach to equipment, training, and technical expertise within RNZE for the management of hazardous chemicals.

88. There are several public relations issues which arise. Firstly it is possible that they press may misinterpret the nature of the problem and state that personnel are being exposed to toxic substances. Secondly the locals may apportion some blame to the TMG if someone gets hurt because of the chemicals. This may have a detrimental effect on the TMG performing its role.

Conclusions

89. Now that the cease fire has taken effect, the locals have had an opportunity to more safely scavenge and in doing so, they have been interfering with the storage of the chemicals. Concurrent with this have been the effects of the environment. Almost ten years of a humid, tropical climate, combined with salt laden sea air, has had a detrimental effect on the storage facilities.

90. Because of the limited time period in which to conduct the survey, difficulties with working in a tropical environment, and to a lesser extent, the dangers associated with booby traps and mines, the primary focus was the hazards posed to TMG personnel. Therefore, with the exception of the sodium isopropyl xanthate (which was reported by the locals), the survey was only done within the vicinity of Loloho. Notwithstanding this, hazardous chemicals were found in nine different locations. That there are more hazardous chemicals to be found, can be evidenced by the Rio Tinto Minerals facsimile.

91. Some of the chemicals are an acute hazard, e.g. the sodium isopropyl xanthate which is spontaneously combustible and is waiting to explode. Some are more chronic e.g. the polychlorinated biphenyls which accumulate in the environment and affect life right up through the food chain.

92. Due to the interventions carried out by Capt Stannard and Flt Lt Hopkins, the present risks posed directly to TMG personnel is low. The level of risk posed to the locals is directly proportional to their level of interference.

This interference also poses risks indirectly to TMG personnel e.g. to medical personnel treating affected locals, toxic fumes produced if there was a fire, and public relation issues.

93. These interventions are only of a temporary nature, however. Longer term, the risks will steadily increase as the locals interfere more and the detrimental affects of the environment increase. It is urgent that disposal of the chemicals be planned and carried out in the near future rather than in the long term.

Recommendations

94. The following recommendations are made that:

a. due to the temporary nature of the control measures and the urgency of the situation, a formalised plan for the permanent control and disposal needs to be undertaken;

b. the BCL offer to pay for the disposal of the chemicals be formally followed up;

c. the proposal for a material safety data sheet database be actioned;

d. further deployments, where hazardous substances are suspected, shfould be identified at the reconnaissance stage and be evaluated by an appropriate expert;

e. an appropriate expert be identified within Defence or engaged as a consultant to handle the management of hazardous substances in the future;

f. public relation issues of the chemicals be investigated; and

g. a study be undertaken to identify the RNZE support, logistics, and technical expertise for hazardous chemical management.

Enclosures:

1. Reference C.

2. Rio Tinto Minerals (PNG) Pty Ltd facsimile of 19 Mar 98.

3. Photos.

DR T R FOGG
MB FAFPHM
M[illegible]l Clinic
c/o Postal Agency
TE KAHA
BAY OF PLENTY
Saturday, November 22, 1997

Mr. D, McKinnon
Parliament Buildings
Wellington

Bougainville
P.C.B pollution ,JABA River

I was **Occupational Physician** to **Bougainville Copper Ltd.**, from 1980-82 and during the latter part of that time I was involved in rescuing about 30 drums of **Askeral** which was 80%+ pure PCB (Polychlorinated Biphenyl) which were in a leaky corroded condition ,from a dump at the port at Arawa and transferring them on a flat-bed truck to a purpose - made containing site on the North Dump, where they joined other similar deteriorated containers from other parts of the Mine.

Askeral was used by **Bechtel** who set up the electrical facility , as insulating oil in the transformers due to the fact that it would resist lightning strikes and not explode in the transformers which were both outside in switchyards, on line, and inside various facilities.

When set up, the dangers of PCBs to health had not been appreciated.

The **Containment Site** is a concrete slab approximately 30 ft square with a surrounding berm 2-3 ft to contain leaks, with inset upright pipes supporting a 15ft hurricane wire fence with a large lockable gate.

Inside this compound are three stainless steel cylinders approx. $4^{1/2}$ ft diameter and ~ 15 ft long with concrete supports fore and aft. These have a round sealable hatch in front, and on top and a port for gas to pressurise the cylinder.

Askeral was pumped manually from the 44Gal. Drums into both the side cylinders and the centre cylinder received the pump ,impervious protection clothing, cleanup and other contaminated materials.

The drums were then pressurised with 5psi Nitrogen from a cylinder remaining in the compound and registered on a pressure gauge on each cylinder.

When I last observed the scene ,one of the lateral cylinders had crumpled inwards due to an attempt to pump fluid from one to another and so fill one completely, without allowing for gas or air to enter to replace the fluid volume. The Nitrogen cylinder had fallen on its side and none of the gauges showed any pressure. This establishment was not under my control.

I am concerned that with the civil war the cylinders may have been subject to damage from target practice and leaked their contents over the berm and into the dump and through the loose rock into the Jaba river and out to sea and become a major pollutant ,as it does not break down and spreads widely in the ecosphere similarly to DDT.

I took an 8mm film of this operation and am certain that there were at least 30 x 44Gal drums=1320Gals. Of Askeral involved.

Recently I contacted BCL enquiring about its fate .No-one from BCL had seen the site for 8 years and they thought that only 180 Liters remained. I am skeptical of this as the material was dumped in the first place because it would not be accepted off the Island, especially into Australia, and apprehension in its handling and distribution has increased since that time ,i.e. by freighthandlers, wharfies etc. You will remember the outcry when we attempted to burn some in the cement works in Golden Bay and the scallop fishermen blocked it.

If our peacekeeping force is able to examine the mine it would be of world ecological importance to establish the present existence and condition of the containment site and its contents and estimate how much PCB may have escaped into the environment.

With regard to Malaria our troops should not be at great risk provided a firm discipline is taken in physical prevention measures such as distance of encampment from national villages, clearing around camps insecticide residual sprays and attention to clothing.

I was in charge of malaria prophylaxis at the mine and introduced a stricter regimen of CHLOROQUINE and MALOPRIM and we had no malaria problems such as I saw later working in LAE.

I would be interested in you comments and grateful for any information that can be gathered on the PCB question. I feel that this should be proceeded with discretion as any major leak of PCB discovered could be a cause celebre for environmentalists

T.R.Fogg
(Previously Principal Medical Officer, Occupational Health , Dept. of Health.)

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Department of Defence
Land Headquarters

FACSIMILE COVER SHEET

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File Number:	Senders Name: MAJ M.R. TAYLOR
Precedence: ROUTINE	DTG Sent:
Facsimile Destination	Facsimile Originator
G3 BRANCH LAND COMMAND TRENTHAM CAMP NEW ZEALAND	OPERATIONS BRANCH LAND HEADQUARTERS VICTORIA BARRACKS PADDINGTON 2021
Unclas Fax No:	Unclas Fax No:
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Subject Title: NZLO OP BELISI REPORT	

Instructions/Comments

INFO COPY : HQNZDF OPS ← LCOMD PSE FWD COPY TO HQNZDF OPS.

Releasing Officer's Name	Signature	Rank / Appointment	Date
M.R. TAYLOR		MAJ / NZLO	29 JUN 98

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(Unlisted) 17/02/98

Telephone s. 6(a)
Fax:

New Zealand Liaison Officer
Land Headquarters
Oxford Street
PADDINGTON NSW 2021
AUSTRALIA

29 Jun 98

Land Command (NZ)
(Attn: G3)

WEEKLY REPORT FOR THE PERIOD ENDING 28 JUN 98

Reference:

A. Land Command Deployment Directive for Op Belisi Liaison Officer dated 17 Jun 98

1. In accordance with Reference A this report is submitted to cover the activities of the New Zealand Liaison Officer for the period 21-28 Jun 98.

Main Events.

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c. From PMG to ADHQ Ops: "We are unsure on the way ahead proposed for containing and disposing of the chemical material at Loloho given recent communications. We understand from a DFAT working group report that BCL [(Bougainville Copper Ltd??) my note] intends to decontaminate and contain the problem, and in the long term, store in situ with a view to possible reprocessing ***in the event that the mine is reopened*** (my emphasis). There is apparently no intent to actually remove the problem from the island at this stage. This approach appears to be at odds with the strategy agreed between COMAST, LCAUST and COMD PMG which was that:

(1) Additional containment measures were to be implemented in the interests of force protection but that due recognition had to be paid to the environment and the operations of the PMG.

(2) No repositioning of existing chemicals was to occur until such time as a strategy to dispose of all the accessable chemicals was developed and agreed.

(3) Disposal, if possible, should be completed during the life of the PMG so that the problem did not remain after its departure, and

(4) The strategy for the disposal of the chemicals would not be implemented until an awareness programme had been conducted by the PMG.

There would also appear to be the potential for duplication between the containment tasks proposed for the CRRT and the containmnent tasks proposed to be undertaken by the BCL team. Clarification is sought.

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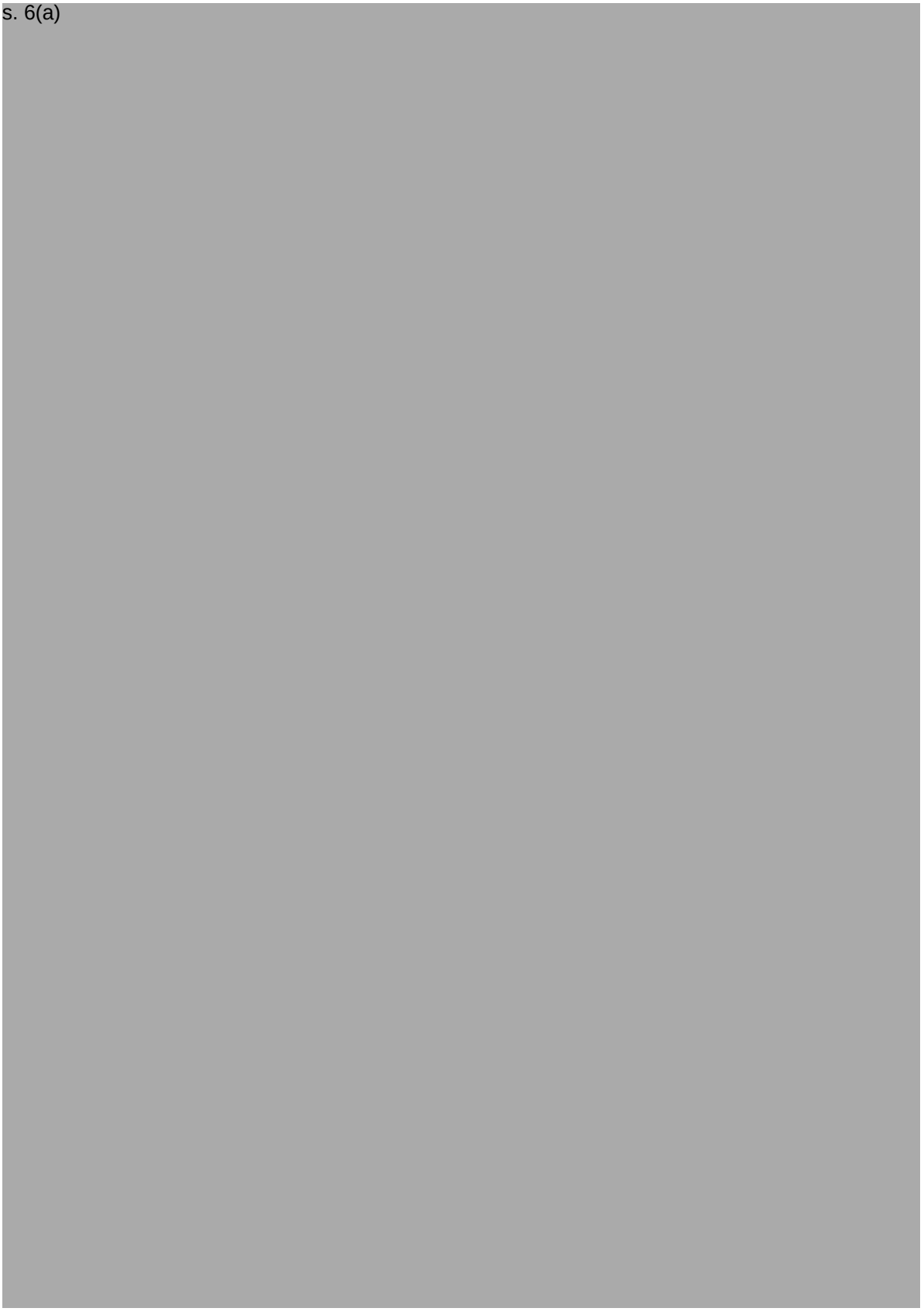

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M.R. TAYLOR
Major
NZLO LHQ (AS)