Abnormal Health Disorders arising from Military Service in Malaysia 1948 to 1969

Response to New Zealand Study:

Dibutylphthalate as a causative of health issues from application as an insecticide in Malaya.

Victor R Johnson
Hamilton, New Zealand
Abnormal Health Disorders arising from Military Service in Malaysia 1948 to 1969

Copyright © 2012 by Victor R Johnson
First Edition: 24 August 2012

All rights reserved. No part of this book shall be reproduced, stored in a retrieval system, or transmitted by any means without written permission from the author.

About the Author.

Victor R Johnson served with the New Zealand Defence Force army from January 1963 to July 1972, followed by service with the New Zealand Defence Territorial Service.

His campaign service was in Malaya from 1963 to 1965 with the 1st Battalion Royal New Zealand Infantry Regiment. During this time he was an infantry platoon section Second-in-Command. The military engagements included active service on the Malay/Thailand border against communist terrorists, active service on the Malay Peninsula and Borneo during the Indonesian Confrontation.

On return to New Zealand the author underwent training, gaining qualifications in particular as an All-Arms Instructor.

The author returned to Malaysia in late 1967 as part of the 1st Battalion Royal New Zealand Infantry Regiment. Training was undertaken in that country for subsequent posting on active service as a platoon sergeant with an infantry rifle company.

In 2007, the author was honoured as a Member of the New Zealand Order of Merit in the Queens Birthday Honours for services to returned services personnel and the community.

Cover:

Table of Contents

Terms and Definitions............................................................................................................1
1.0 Introduction......................................................................................................................2
1.1 Map of Malaysia.............................................................................................................3
3.0 Dibutylphthalate Explained .............................................................................................4
  3.1 Dibutylphthalate in European Union ...........................................................................4
  3.2 Dibutylphthalate in United States of America .............................................................4
4.0 New Zealand Study - Increased incidence of hypospadias and cryptorchidism in sons of
dibutylphthalate-exposed NZ war veterans ...........................................................................4
5.0 Malaysia’s Climate ..........................................................................................................5
  5.1 Malaysia’s Regional Climates .....................................................................................5
  5.2 Malaysia’s Monsoon Rains ..........................................................................................5
6.0 Military Infantry Units in Malaysia .................................................................................6
  6.1 British Military Engagement in Malaysia.................................................................6
  6.2 New Zealand Military Infantry Operations in Malaysia ..............................................6
  6.3 British Infantry Units Stationed in Malaysia ...............................................................7
  6.4 Commonwealth Military Infantry Units in Malaysia...................................................7
7.0 Military Training and Campaign Operations in Malaysia ...............................................9
  7.1 Infantry Battalion Operations ...................................................................................9
  7.2 Jungle Day Routine ....................................................................................................9
  7.3 Operational Jungle Evening Routine .........................................................................10
  7.4 Jungle Dawn Routine ...............................................................................................10
8.0 New Zealand Servicemen Subsequent Southeast Asia Service .....................................10
9.0 Chemical Exposure Studies and Occupations................................................................11
10.0 Summary .......................................................................................................................12
Appendix A. British Infantry Units .....................................................................................13
Appendix B. Commonwealth Infantry Units in Malaysia ...................................................15
References...........................................................................................................................16
### Terms and Definitions

The terms used in this document are defined in the following table.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACARICIDE</td>
<td>A product that will kill mites.</td>
</tr>
<tr>
<td>DERMATOPHYTE</td>
<td>Ringworm fungi [tinea]</td>
</tr>
<tr>
<td>ECTOPARASITICIDE</td>
<td>Any pesticide designed to kill parasites that live on the exterior of a host.</td>
</tr>
<tr>
<td>EDC</td>
<td>Endocrine disrupting compound.</td>
</tr>
<tr>
<td>ENDOCRINE</td>
<td>The system of glands, each of which secretes a type of hormone directly into the bloodstream to regulate the body. The endocrine system is in contrast to the exocrine system, which secretes its chemicals using ducts.</td>
</tr>
<tr>
<td>EPIDEMIOLOGY</td>
<td>The study of the distribution and determinants of health-related states or events [including disease], and the application of this study to the control of diseases and other health problems.</td>
</tr>
<tr>
<td>FIELD</td>
<td>The terrain and environment in which military personnel train and operate away from a static base camp.</td>
</tr>
<tr>
<td>PLASTICISER</td>
<td>Additives that increase plasticity or fluidity of a material. The dominant applications are for plastics, especially polyvinyl chloride [PVC]. The properties of other materials are also improved when blended with plasticizers including concrete, clays, and related products.</td>
</tr>
<tr>
<td>TERATOGEN</td>
<td>Any agent that can disturb the development of an embryo or fetus. Teratogens may cause a birth defect in the child. Or a teratogen may halt the pregnancy outright. The classes of teratogens include radiation, maternal infections, chemicals, and drugs.</td>
</tr>
<tr>
<td>TINEA PEDIS</td>
<td>A foot infection due to a dermatophyte fungus. Tinea pedis thrives in warm humid conditions and is most common in young adult men.</td>
</tr>
</tbody>
</table>
1.0 Introduction

A recently published study claims that sons of New Zealand military personnel exposed to dibutylphthalate [DBP] during service in Malaya [Malaysia] are at increased risk of two types of genital malformation, and daughters at increased risk of breast cancer. [1]

The purpose of using DBP insecticide was to coat seams of shirts and trousers as a prevention measure against insects gathering, such as ticks and mites that are part of the jungle environment.

In the published study, reference is made to implications on human health from exposure to DBP. Dibutylphthalate [DBP] is an endocrine disrupting compound [EDC].

EDCs have been implicated in human exposure effects including cryptorchidism, hypospadias and precocious puberty in girls1; however there is no definitive cause/effect evidence. [2]

One of the study’s author’s posits that the children of the self-report's had experienced higher rates of hypospadias [deformed penis], undescended testes and breast cancer than the population norm.

"While the numbers are small in terms of absolute numbers, the statistical difference between normal people and those exposed to DBP is very significant." Shaw said the soldiers would have been in "constant contact" with the chemical dibutylphthalate, known as DBP.

The actual number of New Zealand personnel most likely exposed who had service in Malaysia is indeterminate within the study. In conducting the research only eighty-six questionnaires were returned, with 73 self-reporting repeat exposure to DBT.

Given the time and nature of military engagement in Malaysia since the occurrence, corroboration of exposure would be expected as basis for statistically sound study.

New Zealand military forces were based in Malaysia from 1955 until 1969. The personnel most likely to have used DBP were those undergoing training and active service operations on the Malay Peninsula and in Borneo. The majority were from infantry battalion army units.

Of the insect repellants used in Malaysia by military forces during the 1950’s and 1960’s, one included the DBP compound. A question is, how is exposure defined? The nature of military service in Malaysia does not make it a generic fact for all who served.

During military service in Malaysia, an individual was to apply the DBP to clothing seams each day whilst in the field. This was not a common practice, mostly foregone due to a person’s occupation not allowing time for the practice. Another factor affecting the practice was Malaysia’s climatic conditions, especially in the jungles.
1.1 Map of Malaysia

The Federation of Malaysia consists of States on the Malay Peninsula and Borneo. There are eleven states and two federal territories on the Malay Peninsula: Perlis, Kedah, Penang, Perak, Kelantan, Terengganu, Pahang, Selongor, Negeri Sembalan, Malacca, and Johor.

The two Borneo states are Sarawak, and Sabah. Labuan is the federal territory. Figure 1 shows the States of Malaysia.

3.0 Dibutylphthalate Explained

Dibutyl phthalate [DBP] is a commonly used plasticizer. It is also used as an additive to adhesives or printing inks. It is soluble in various organic solvents; such as in alcohol, ether and benzene. DBP is also used as an ectoparasiticide. Therefore, within certain industries and occupations, individuals are likely to have been exposed to skin ingestion of the DBP chemical [3]

3.1 Dibutylphthalate in European Union

Within the European Union, in 1976 DBP was banned from products such as cosmetics and nail polishes. Restrictions were also placed within the European Union on use of DBP in children's toys. [3]

3.2 Dibutylphthalate in United States of America

Because it was a suspect teratogen, DBP was added to the suspect list in California, USA, in 1986. During 2006, manufacturers began eliminating DBP that was being used in some nail polishes. [3]

DBP was added to the California Proposition 65 [1986] list of suspected teratogens in November 2006. It is a suspected endocrine disruptor.

It was used in some nail polishes; all major producers began eliminating this chemical from nail polishes in 2006. DBP was permanently banned in children's toys and childcare articles, in concentration of 1000 ppm or greater. [3]

4.0 New Zealand Study - Increased incidence of hypospadias and cryptorchidism in sons of dibutylphthalate-exposed NZ war veterans

A study, Increased incidence of hypospadias and cryptorchidism in sons of dibutylphthalate-exposed NZ war veterans, was published in the New Zealand Medical Journal on the subject of human health effects from use of an insecticide in Malaysia.

The study was of New Zealand military forces in Malaysia up to 1960, and implicates health effects within off-spring of those having served in that country at that time. DBP was to have been applied onto clothing seams by individuals before embarking on military operations in the field. The insecticide inevitably contaminated skin from where it is known to be well absorbed.

The exposure Dibutylphthalate [DBP] is an endocrine disrupting compound [EDC].

EDCs have been implicated in human exposure effects including cryptorchidism, hypospadias and precocious puberty in girls; however there is no definitive cause/effect evidence.

DBP-exposed NZ Malaysian veterans were an interesting exposure cohort group in which to study EDC effects. The study undertaken by M.B. Carran and I.C. Shaw, and published in the New Zealand Medical Journal, posits increases in incidences of hypospadias, cryptorchidism, and breast cancer in children of New Zealand soldiers who served in Malaya [1948–1960].
Members of the NZ Army stationed in Malaysia from 1955 to 1969 were to have used DBP as an acaricide product to prevent bush typhus which is transmitted by several ticks, including Tronbicula akamushi. The product was also used for the same purpose by infantry troops of the United Kingdom and the Commonwealth who were based in Malaysia during the Communist Emergency and Indonesian Confrontation.

The study defined those exposed to DBP as those who applied the insecticide daily to their clothing as an acaricide to prevent tick-transmitted bush typhus.

In addition, absorption of DBP was modeled from soldiers’ clothing and using published data for skin absorption, and calculated a large theoretical absorbed dose of 64 mg/kg body weight/day which is similar to DBP’s lowest observed adverse effect level [LOAEL] of 50 mg/kg body weight/day and thus indicates a biological effect is possible.

5.0 Malaysia’s Climate

For purposes of understanding military duties in the field, the climate on the Malay Peninsula and the eastern states need to taken into account, especially rainfall, terrain and vegetation. The majority of terrain and environment for the field training and operations was virgin jungle vegetation.

Malaysia faces two monsoon winds seasons, the Southwest Monsoon from late May to September, and the Northeast Monsoon from November to March. The Northeast Monsoon brings in more rainfall compared to the Southwest Monsoon, originating in China and the North Pacific. The southwest monsoon originates from the deserts of Australia March and October form transitions between the two monsoons.

5.1 Malaysia’s Regional Climates

Local climates are affected by mountain ranges throughout Malaysia, and climate can be divided into that of the highlands, the lowlands, and coastal regions. The coasts have a sunny climate, with temperatures ranging between 23 °C and 32 °C, and rainfall ranging from 10 centimetres to 30 centimetres a month.

The lowlands have a similar temperature, but follow a more distinctive rainfall pattern and show very high humidity levels. The highlands are cooler and wetter, and display a greater temperature variation. A large amount of cloud cover is present over the highlands, which have humidity levels that do not fall below 75%.[6]

5.2 Malaysia’s Monsoon Rains

Rainfall in the jungle during the monsoon periods was so consistent that soldiers commonly referred to the fact that one’s watch could be set daily at 4:00pm when the deluge occurred. The saturated vegetation was cause for constantly wet clothing during the day and almost instant dilution and leaching of any external product applied, such as DBP.

For example, leeches seemed impervious to DBP, with soldiers constantly removing them from their bodies using salt, or a cigarette lighter.
6.0 Military Infantry Units in Malaysia

The roles of military infantry units stationed in Malaysia were basically that of jungle warfare, operating in the same environment as the New Zealand battalions that were rotated two-yearly. The same rotation policy applied to all units, being from the United Kingdom and some Commonwealth countries.

6.1 British Military Engagement in Malaysia

The British Commonwealth forces engagement in Malaysia, under The Far East Command, had two distinct periods.

Firstly, from 18 November 1940 – 7 January 1942 succeeded by the American-British-Dutch-Australian Command [ABDACOM].

Secondly, 1963 – 1971 succeeded by Australia, New Zealand, and United Kingdom Force [ANZUK FORCE].

The British brought emergency measures into law in June 1948 to counter militant protests following Japanese defeat and surrender in Malaya in 1945, first in the State of Perak in response to an incident and then, in July, country-wide.

The Indonesian Confrontation in the early to mid-1960’s resulted in more military conflict within Malaysia.

The Commonwealth forces involved were from Australia, Fiji, and New Zealand, and Rhodesia, and the United Kingdom.

In the end, the military engagements in Malaysia involved a maximum of 40,000 British and Commonwealth troops, against a peak of about 7–8,000 communist guerrillas.

6.2 New Zealand Military Infantry Operations in Malaysia

The DBP study report does not encompass the specific type and nature of military operations undertaken by New Zealand army soldiers in Malaysia for the period of the study group’s service.

Following an RNZAF contribution, New Zealand became more directly involved in the Malayan Emergency in 1955. The initial New Zealand contribution was a Special Air Service squadron, with soldiers spending an average of 17 months on jungle operations out of a 24 month tour of duty. The RNZAF continued to operate with the Far East Command.

From March 1958, the SAS Squadron was replaced by the 1st Battalion of the New Zealand Regiment as part of the 28th Commonwealth Infantry Brigade Group. It mounted a series of deep jungle patrols from the towns of Ipoh and Grik, with great success. When the 2nd Battalion of the New Zealand Regiment replaced the 1st Battalion in late 1959, most of the Communist guerrillas had retreated across the border into southern Thailand.
The security situation in Malaya stabilised enough to declare the Emergency over on 31 July 1960. New Zealand soldiers would be periodically deployed to Border Security Areas as part of counter-insurgency measures over the next four years.

Troops based in Malaysia operated from a base camp, with soldiers spending from one or two weeks in the jungle environment to upwards of six weeks or more before returning to the base camp location.

The number of New Zealanders who served in the Malaysia between 1955 and 1969 is indeterminate. An infantry battalion nominally consisted of approximately 950 persons. In all, four full battalions had served during that period with a number of persons two or three tours of duty.

6.3 British Infantry Units Stationed in Malaysia

The British infantry units stationed in Malaysia during the Emergency and Indonesian Confrontation between 1948 and 1969 are estimated at 51, inclusive of Gurkha battalions. The service for some units was on a two-yearly rotational basis.

The service for some units was on a two-yearly rotational basis. This illustrates that New Zealand infantry personnel would not have been the only personnel to have used DBP.

The units were based throughout Malaysia and performed the same operational roles as New Zealanders.
Table 1 in Appendix A lists the estimated British Infantry units based in Malaysia.

6.4 Commonwealth Military Infantry Units in Malaysia

The Commonwealth military infantry units stationed in Malaya during the Emergency and Indonesian Confrontation, between 1955 and 1969, were approximately 8 battalions and 2 SAS Squadrons. This illustrates that New Zealand infantry personnel would not have been the only personnel to have used DBP.

The service for some units from Australia and New Zealand was on a two-yearly rotational basis.

Table 2 in Appendix B lists the Commonwealth Infantry units based in Malaysia.
The typical Malaysian terrain and environmental conditions that infantry soldiers were operating in are illustrated in the images in Figure 2. One image shows Fijian soldiers training in Fiji in preparation for the jungle environment.

Figure 2. Typical Malaysian terrain and environmental conditions that infantry soldiers were operating in.
7.0 **Military Training and Campaign Operations in Malaysia**

During the times of internal and external conflict within Malaysia, military support was given by the United Kingdom using land, sea, and air forces from Great Britain, Australia and New Zealand. The primary force was the 28th Commonwealth Brigade with the earlier New Zealand Infantry Battalions based in a northern Malaya State, in proximity to the Malay/Thai border. The subsequent battalions were based at Terendak Military Camp near the city of Malacca from 1961 to 1969.

Being sited on the coastline, the Brigade camp included the wives and children of the servicemen as well as a civilian work force from the local population. Terendak Camp was free of mites and suchlike and did not require use of DBP on clothing within the camp confines.

The Brigade’s main force consisted of infantry battalions from Great Britain, Australia and New Zealand and Malaya. Supporting arms included light artillery and service units.

The Brigade’s forces undertook field training and operations in a constant state of combat readiness, always undertaken in realism. The state of combat readiness dictated the conditions under which military activities were undertaken in the jungle.

7.1 **Infantry Battalion Operations**

The standard operating procedure for infantry battalions was to proceed into a training exercise or operational area as whole unit, or an infantry rifle company sub-unit made up of three platoons and a company headquarters. An infantryman carried everything required for daily and night activities in a backpack, this included a bedroll. He only had two sets of clothing.

A bedroll consisted of a lightweight shelter, mosquito net, and one set of dry socks, shirt and trousers. Once acclimatized, the bedroll could include a light woolen jumper used when the jungle interior cooled at night. Some personnel used hammocks. Other necessities were carried in the backpack, such as food rations, mess tins, cooker, insect repellant, radio batteries, toiletries and suchlike. The average backpack weight was 41 to 45kg. [10]

Rarely did an infantryman fully unpack his kit and have it lying around. By day or night, enemy action within the jungle is virtually instant, with an alert being given by a sentry.

7.2 **Jungle Day Routine**

The day routine in jungle included constant patrolling from point to point, or from a static location. During this time the bare minimum was unpacked due to the need for alertness and instant reaction to an event involving enemy forces.

The same set of clothing was worn day after day, often saturated from rain and dripping vegetation. Liquid insecticides, if time permitted for application, were quickly diluted and leached out.

The clothing saturation also came from traversing rivers and streams, of which there is abundance within the Malaysian jungles.
7.3 Operational Jungle Evening Routine

The evening routine within the jungle and other areas was to set up a night camp, have a meal, clean weapons on a rostered basis, and ensure everything other than bedroll items were packed. An important personal hygiene action was application of foot powder in order to minimise tinea pedis.

The combat readiness routine involved a period of stand-to, 30 minutes before last light. There is no twilight in the Malaysian jungles, one minute it is dusk, the next minute it is pitch black. Torches were barely used in case light disclosed positions to an enemy.

A group of soldiers would establish a safe harbour at approximately 3:00pm and set up sleeping areas with lightweight shelters before preparing an individual meal. It was during the afternoon monsoon rain at about 4.00pm that, with sentries placed, the group would eat, clean weapons, and prepare for stand-to.

The evening routine did not allow for applying of the PCB insecticide to clothing which was invariably saturated.

7.4 Jungle Dawn Routine

The dawn routine in the jungle consisted of all persons being at combat readiness 30 minutes before first light and 30 minutes after. This was the stand-to during which there was absolutely no movement from within any position.

Following dawn stand-to, there were two possible actions for a group to undertake. The first would be for a static location, in that breakfast would eaten and patrols sent out.

The second would be more complex. Prior to stand-to, all members of the group will have tied up their bedrolls and have their backpacks ready to put on and move. At the end of stand-to, the group would move out of the night location and proceed for perhaps one hour to another pre-selected location before stopping. At that point group members would have posted sentries and had a breakfast, with nothing else unpacked so as to be in a constant state of readiness to move.

8.0 New Zealand Servicemen Subsequent Southeast Asia Service

A confounding factor in the subject of DBP affect on New Zealand servicemen’s health is that seven infantry rifle company’s trained in Malaysia prior to being posted to subsequent service in South Vietnam. Approximately 1300 infantryman trained in Malaysia before posting to active service.

During research and presentation of abnormal health diseases and disorders among New Zealand Vietnam veterans at no time was one case made known of son’s genital malformation, or daughters at increased risk of breast cancer. [8]
9.0 Chemical Exposure Studies and Occupations

Epidemiology studies of groups for chemical exposure and affects on health are always at risk of variants. In the case of DBP, any study of cause and effect relationship to health would need to include the occupations of the study group and cohort members.

During research on the effect on human health from exposure to herbicides, the author met with Professor Theodore Sterling, a statistical scientist at Simon Fraser University, Burnaby, Vancouver during 1990.

Professor Sterling and a colleague had analysed all studies undertaken by Monsanto Chemical Company of cause and effects from 2,4,5-T exposure on human health. Contrary to Monsanto’s findings of no cause and effect relationship, the analysis determined there were very significant effects. In some cases the detrimental effect on human health was more than 600-fold.

Professor Sterling had also undertaken statistical analysis of the data used in researching the effects on human health from tobacco smoking. He commented that within within one epidemiological the occupations of the study group had not been effectively checked.

It was found that some diseases attributed to tobacco smoking were in fact occupationally related, underground coal mining.
10.0 Summary

Given that DBP was, and still is, used within industries to which exposure to the chemical is possible, it would be prudent to ensure that servicemen having been in Malaysia had no exposure from a civilian occupation. And like so for a spouse or partner who has borne children to the aforesaid.

Given and nature of operating in Malaysia for infantryman, the probability of high or constant exposure of New Zealand servicemen to DBP would seem minimal due to the:

- Application of the chemical being neither supervised or insisted upon.
- Conditions of military operations in Malaysia not affording opportunity for daily application of DBP
- Wet and damp climatic and environmental conditions diluting or causing the DBP to leach from clothing seams
- With the numbers of military personnel engaged within infantry units from Malaysia, Australia, Fiji, New Zealand, Rhodesia and the United Kingdom, any abnormal health diseases or disorders would have been predominately evident before now.

Given the climatic conditions, on average, being monsoonal and limited opportunity to apply DBP to clothing, it is a question of whether or not the chemical will have become rapidly diluted or leached from clothing before constant skin contact occurred.

During the author’s extensive research and submissions on the matter of Agent Orange, no person came forward who had served only in Malaysia indicating the abnormal disease or health disorders within off-spring of:

- genital malformation among sons,
- daughters with breast cancer

This does have some significance due to the number of persons who served in South Vietnam having also served in Malaysia. As an example, the infantry battalion in Malaysia from 1963 to 1965 consisted of 978 members. Of those, 253 later served in South Vietnam.[9]

Caution must always prevail in regard to military service vocation, by its very nature it does not translate with clarity by comparison to civilian occupations.

Given that breast cancer is proportionately high within the New Zealand population, the occupation of all members of a study group, the control and cohort, would need to identify actual prolonged exposure to chemicals such as DBP.

Given the numbers from other commonwealth forces who served in Malaysia, it would be expected that abnormal health disorders of increased genital malformation, and daughters with breast cancer would have been evident by this time. No evidence has been forthcoming to date of such abnormal health disorders.
Appendix A. British Infantry Units

The unofficial estimated number of British Infantry battalion units that served in Malaysia from 1948 to 1969 is 51, inclusive of Gurkha battalions, as shown in Table 1.

Table 1. British Infantry Units that served in Malaysia 1948 to 1949.

<table>
<thead>
<tr>
<th>Battalion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Battalion Kings Own Yorkshire Light Infantry</td>
</tr>
<tr>
<td>1st Battalion Gordon Highlanders.</td>
</tr>
<tr>
<td>3rd Grenadier Guards</td>
</tr>
<tr>
<td>2nd Coldstream Guards</td>
</tr>
<tr>
<td>2nd Scots Guards</td>
</tr>
<tr>
<td>1st Battalion The Queen’s Royal Regiment (West Surrey) 2nd of Foot</td>
</tr>
<tr>
<td>Royal Lincolnshire Regiment.</td>
</tr>
<tr>
<td>1st Battalion The Devonshire Regiment</td>
</tr>
<tr>
<td>1st Battalion The Suffolk Regiment</td>
</tr>
<tr>
<td>1st Battalion The Somerset Light Infantry (Prince Albert’s)</td>
</tr>
<tr>
<td>1st Battalion The West Yorkshire Regiment (The Prince of Wales Own)</td>
</tr>
<tr>
<td>1st Battalion The East Yorkshire Regiment (The Duke of York’s Own)</td>
</tr>
<tr>
<td>1st Battalion The Green Howards (Alexandra, Princess of Wales’s Own Yorkshire Regiment)</td>
</tr>
<tr>
<td>1st Battalion The Royal Scots Fusiliers</td>
</tr>
<tr>
<td>1st Battalion The Cheshire Regiment</td>
</tr>
<tr>
<td>2nd Battalion The Royal Welch Fusiliers 1954-1957</td>
</tr>
<tr>
<td>B Company, Royal Welch Fusiliers,(6 platoon)</td>
</tr>
<tr>
<td>1st Battalion The South Wales Regiment</td>
</tr>
<tr>
<td>1st Battalion The Cameronians (Scottish Rifles)</td>
</tr>
<tr>
<td>1st Battalion The Royal Inniskilling Fusiliers</td>
</tr>
<tr>
<td>1st Battalion The Worcestershire Regiment</td>
</tr>
<tr>
<td>1st Battalion The Royal Hampshire Regiment</td>
</tr>
<tr>
<td>1st Battalion The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment)</td>
</tr>
<tr>
<td>1st Battalion The Loyal Regiment (North Lancashire)</td>
</tr>
<tr>
<td>1st Battalion 3rd East Anglian Regiment (16th/44th Foot)</td>
</tr>
<tr>
<td>1st Battalion The Queen’s Own Royal West Kent Regiment</td>
</tr>
<tr>
<td>1st Battalion The King’s Own Yorkshire Light Infantry</td>
</tr>
<tr>
<td>2nd Battalion The King’s Own Yorkshire Light Infantry</td>
</tr>
<tr>
<td>1st Battalion The Kings Own Scottish Borderers</td>
</tr>
<tr>
<td>1st Battalion The Wiltshire Regiment (Duke of Edinburgh’s)</td>
</tr>
<tr>
<td>1st Battalion The Manchester Regiment</td>
</tr>
<tr>
<td>1st Battalion Seaforth Highlanders (Ross-Shire Buffs, The Duke of Albany’s)</td>
</tr>
<tr>
<td>1st Battalion The Gordon Highlanders</td>
</tr>
<tr>
<td>1st Battalion The Argyll and Sutherland Highlanders (Princes Louise’s)</td>
</tr>
<tr>
<td>The Queen’s Own Cameron Highlanders</td>
</tr>
<tr>
<td>The Independent Parachute Squadron</td>
</tr>
<tr>
<td>1st/2nd King Edwards VII’s Own Gurkha Rifles (The Sirmoor Rifles)</td>
</tr>
<tr>
<td>1st/6th Queen Elizabeth’s Own Gurkha Rifles.</td>
</tr>
<tr>
<td>2nd/6th Queen Elizabeth’s Own Gurkha Rifles.</td>
</tr>
<tr>
<td>1st/7th Duke of Edinburgh’s Own Gurkha Rifles.</td>
</tr>
<tr>
<td>2nd/7th Duke of Edinburgh’s Own Gurkha Rifles.</td>
</tr>
<tr>
<td>1st/10th Princess Mary’s Own Gurkha Rifles.</td>
</tr>
<tr>
<td>2nd/10th Princess Mary’s Own Gurkha Rifles.</td>
</tr>
</tbody>
</table>
1st Battalion The Rifle Brigade (Prince Consort’s Own)
22 Special Air Service Regiment
Independent Parachute Squadron
The Royal Sussex Regiment
1st Battalion South Wales Borderers
1st Battalion The King's African Rifles
2nd Battalion The King's Own African Rifles
3rd Battalion The King's African Rifles

Source: The Virgin Soldiers. British and Commonwealth Units that participated in the Malayan Emergency

Table 1. British Infantry Units that served in Malaysia 1948 to 1949.
Appendix B. Commonwealth Infantry Units in Malaysia

The unofficial estimated number of Commonwealth Infantry battalion units that served in Malaysia from 1948 to 1969 is ten, including two SAS Squadrons, as shown in Table 2.

Table 2. Commonwealth Military Infantry Units Malaysia 1955 to 1969.

1st Battalion, Rhodesian African Rifles
1st Battalion The Northern Rhodesia Regiment
The Rhodesia Squadron SAS
1st Battalion The Fiji Infantry Regiment
1st Battalion The Royal Australian Regiment
2nd Battalion The Royal Australian Regiment
3rd Battalion The Royal Australian Regiment
The New Zealand Squadron SAS
1st Battalion The New Zealand Regiment
2nd Battalion The New Zealand Regiment
1st Battalion Royal New Zealand Infantry Regiment

Source: The Virgin Soldiers. British and Commonwealth Units that participated in the Malayan Emergency
References:

1. Increased incidence of hypospadias and cryptorchidism in the sons of dibutylphthalate-exposed NZ war veterans. MB Carran & IC Shaw. Department of Chemistry, University of Canterbury.

2. Increased incidence of hypospadias and cryptorchidism in the sons of dibutylphthalate-exposed NZ war veterans. MB Carran & IC Shaw. Department of Chemistry, University of Canterbury.


