



## PROCEDURES MANUAL

**Ver 2.2**

# FOREWORD

This manual has been written by PCT International Pty Ltd. to provide detailed information for professional pest managers accredited to install and service/maintain the NEMESIS TERMITE MONITORING and BAITING SYSTEM. The manual and the intellectual material contained within always remain the property of PCT International Pty. Ltd. The manual is copyright.

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PCT warrants that this product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with Directions for Use under normal conditions of use. No warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of the product contrary to label instructions or under off-label permits not endorsed by PCT, or under abnormal conditions.

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## 1. INTRODUCTION.

**T**he  **nemesis** TERMITE BAITING and MONITORING SYSTEM is an integrated termite management system which relies upon advanced, low-toxic subterranean termite baiting technology. The active constituent of NEMESIS bait, *Chlorfluazuron*, belongs to a group of control agents classified as insect growth regulators (IGRs). Small, measured doses of the IGR in the NEMESIS Termite Bait are presented in a highly attractive and palatable feeding matrix to the active termites as they forage for food sources or while they are attacking timbers. The moist bait matrix is readily consumed by feeding termites, even in preference to alternate foods. Over a relatively short period of time, individual members of the termite colony (and especially the queen) undergo physical changes that reduce their normal body function and development by inhibiting the moulting process of their bodies. The effect on the queen is a loss of reproductive capability, resulting in the collapse and demise of the colony.

1.2 NEMESIS TERMITE BAIT is placed in areas where and when active termites are encountered; it is contained within purpose-built Stations, greatly enhancing termites' uptake while also ensuring product usage safety. The bait Stations can be placed either inside structures, externally, in roof voids, in subfloor voids or underneath buildings, and attached to other structures such as bridges, wharves, fences, stumps or poles. The NEMESIS system, if used according to label and Australian Standards' instructions, has the capacity to reduce the risk of damage caused by long term undetected termite activity in a wide variety of structures and situations. The NEMESIS TERMITE BAITING SYSTEM is useful for dealing with difficult and/or environmentally sensitive sites or where clients are wary of situations where large volumes of liquid termiticides would otherwise need to be applied. This effective, low toxic system uses significantly less active material than traditional

barrier treatment methods, and is far less invasive, with minimal impact on family life or business operations during treatment.

1.3 However, the system is not a preventative barrier and it does not provide residual protection. The Australian Standard AS 3660.2-2000 states: *"Baiting systems may be used to manage or eradicate existing termite colonies and to monitor for future activity. They are not prophylactic barrier systems and might not prevent future attack. They may be used alone or in conjunction with conventional barrier systems. Baiting can be useful in chronic re-infestation situations where other methods have been unsuccessful. Baiting systems do not impede concealed termite access into a building or structure."*(AS 3660.2-2000 page 23 section 6.5 Baiting Systems)

1.4 The NEMESIS TERMITE BAITING and MONITORING SYSTEM is a proactive system which delivers an additional benefit to professional pest managers. You can install a termite monitoring system that is capable of intercepting termites as they forage around a property, and, in some cases, **prior** to possible detectable or observable entry into a structure. This allows the NEMESIS termite bait to be applied for termite colony control **outside** a structure. The NEMESIS TERMITE BAITING and MONITORING SYSTEM effectively controls hidden termite nests. There is also anecdotal evidence to suggest that termite feeding on structural timbers is suppressed when the colony feeds on registered IGR termite baits such as NEMESIS. This means that the risk of further structural timber damage occurring is potentially reduced during treatment. The system offers great flexibility for professional pest managers as it is designed to be used either as a one-off treatment or as part of a long term integrated management program with provision for ongoing monitoring, in a wide range of situations.

1.5 The NEMESIS TERMITE BAITING and MONITORING SYSTEM is intended to be used in any reasonable manner that the professional pest manager determines to be appropriate for the circumstances, subject to that usage being consistent with the following:

- The work follows registered label instructions.
- The methodology is consistent with AS 3660, & this NEMESIS PROCEDURES MANUAL.

- The client has been provided with a recent written inspection report relating to timber pests or termites for the property, including recommendations for additional inspections from an expert building consultant if required, and for remedial actions to reduce the impact of conducive site conditions. It should contain a comprehensive set of appropriate treatment options. This will enable the client to make an informed decision based on full disclosure of all reasonable treatment methods along with the associated costs, risks and limitations. It is important that the client/professional pest manager relationship is grown in an open and transparent environment. Any suggested treatment program should also highlight specific key performance indicators or landmarks and incorporate a fall-back position or mitigation plan.

#### 1.6 WHY USE THE NEMESIS TERMITE BAITING and MONITORING SYSTEM?

- It works-- termite baiting has been proven to work in the field and in the laboratory.
- The value of termite baiting and monitoring is recognized in AS 3660.2-2000.
- It is proactive and offers very flexible treatment options.
- It is clean, safe and easy to use.
- Less disruptive compared to the installation of liquid chemical termite barriers.
- Environmentally acceptable.
- The product is an unscheduled pesticide and not classified as Dangerous Goods.
- The product is not hazardous according to the criteria of Worksafe Australia.
- The product is made in Australia, by Australians, for Australian conditions.

## 2. SYSTEM DETAILS.

The system consists of the following integrated components:

- Nemesis Termite Bait
- Nemesis Termite Baiting and Monitoring Stations
- Nemesis Monitoring Timber Inserts
- Nemesis Technical Manual
- Nemesis Induction Training and Accreditation Scheme
- Nemesis Support

### NEMESIS TERMITE BAIT

The Nemesis Termite Bait is the key to the success of the NEMESIS TERMITE BAITING and MONITORING SYSTEM.

2.1.1 The NEMESIS TERMITE BAIT is an off-white powder (dry formulation) intended to be mixed with water. The NEMESIS TERMITE BAIT is packaged in individual 100gm sachets for ease of use, product usage control, and for minimizing the risk of bait contamination. The bait formulation has two components:

- The active constituent, *chlorflurazuron*- an insect growth regulator.
- The carrier/bait matrix- a highly palatable cellulose based material.

2.1.2 Only use non-chlorinated bottled water for mixing. Small bottles are the most convenient. It is recommended that this water is kept warm by leaving bottles in direct sunlight. Termites are repelled by cold water. It is also recommended that the water be added to the Nemesis bait IN the resealable bag.

2.2 Mix the bait until a uniform consistency is obtained, as per label instructions. The amount of water used can be varied depending upon the situation and the time of year. In high temperature situations, more moisture is required, but in low temperature situations, less water must be added. We strongly recommend that between 50 to 100ml of water be used in cold weather, to ensure that the bait mixture does not become a batter or a dough.



Sequence showing mixing NEMESIS bait with water in the resealable sachet.



2.3 This prepared bait is then added to either inground Stations (called NEMESIS® IGs) or above ground Stations (called NEMESIS® AGs). Prepared bait can be placed in the station (note: AG only), left in this bag (with an 'X' cut in the side of the sachet). The bag itself can also be used as a bait station in secure situations. If applying bait in the bag, try to orientate the moist portion of bait closest to the termite entry point into the station (if in an AG station). It is recommended that you prime the back of the AG station by irrigating the access point with water laced with a small amount of Nemesis bait.

Nemesis termite bait is only placed in areas or stations where there are active live termites feeding. When replacing bait in AG stations, open up the previous bag . if eaten out, slit it further, exposing the termite fecal spotting and place that into the station with the new bag. (Save these bags for placing in other stations later). Note that in some situations, the bait in the bag can be placed directly onto termite workings as a Station. By way of example:

- attached to timber, wall coverings (plasterboard). These need to be attached with tape or stapled. Seal the underside of the bag with No-more-gaps.



- underneath pavers
- at the base of poles, posts or piers. Wherever possible, seal the bag and/or cover the bag with rocks or other items with reasonable weight as a safety and security precaution.
- On poles, posts or piers, it may be necessary to place a non-bleached corrugated cardboard “bandage” around the pole over the bait.
- At floor edges inside houses it may be necessary to lift carpet and place the bag directly to the termite feeding zone. We recommend that corrugated cardboard or carpet be placed over the bag and a weight be placed on top.
- Some of these above procedures are useful alternate installations for treating infestations of *Schedorhinotermes* and *Nasutitermes*.



NEMESIS bait bag attached directly to wall above another station.  
(Photo courtesy: Colin Skinner)

2.4 The NEMESIS TERMITE BAIT is a readily accepted source of food for the foraging termite workers. It acts slowly and does not affect the foraging termite workers whilst they transport the bait to the termite colony. It is taken into the colony and shared with other

members (known as *trophallaxis*). The termite's natural habits, food preferences, energy saving and feeding behaviour are all used against it. In order to enhance the likelihood of successful termite bait placements, you must identify and differentiate between active termite feeding areas and termite galleries and workings where active termites are travelling and not feeding. NEMESIS TERMITE BAIT **MUST** BE PLACED IN ACTIVE FEEDING ZONES TO ENSURE SUCCESS.

2.5 The NEMESIS TERMITE BAIT relies upon the termite's biology to effect control. As termites grow and develop, they need to shed their skin, or exoskeleton (a process called moulting), after which it starts to reform. It is toughened up by chitin which the termite produces. This chitinous exoskeleton is needed for protection against shock, bumps, abrasions and the effects of desiccation (loss of body moisture). The insect growth regulator in the bait affects the worker termites when they shed their chitin based exoskeletons. The IGR also affects their chitin lined digestive system, making the absorption of nutrients difficult. (This is why there is some anecdotal evidence indicating repressed feeding on timber elements of the structure under attack).



NEMESIS AG Station placed at active feeding zone in a roof void.

2.6 Gradually, as waves of termite workers go through their cycle of growth, development and moulting, the whole colony is affected. The IGR affected termite workers stop feeding other termites and they stop maintaining the colony. At first they become sluggish, then die. When enough termites are affected or die, the termite colony collapses.

2.7 When the termite queen is affected, the eggs do not survive. This means that within a typical 6-16 week period after sufficient background levels of the IGR have been established in the colony, no replacement generations of termite nymphs survive. This accelerates the collapse of the colony as there are no viable replacements- the colony loses whole generations. (Note that not all termite colonies are eliminated within 16 weeks- it may take up to 6 months).

2.8 Colony elimination normally requires that the termites feed on between 100 - 400 grams of Nemesis Termite Bait, although extremely large colonies could take more. Termites may consume more bait than what is required to eliminate the colony. The size, species and natural vigor of the termite colony influences the amount of bait required to eradicate the colony. Older, mature termite colonies have more constituent members, so it takes longer to eliminate them.

The following signs are usually observable during the process of termite baiting:

- Stage1: Termite workers congregate around the bait in large numbers. Only about one in six termites will be soldiers.
- Stage2: Termite workers become sluggish and their appearance changes- looking at their backs, they take on a white/chalky appearance.
- Stage3: Less bait is consumed. Termite workers are fewer in number and appear very chalky. Ratio of soldiers to workers increases.
- Stage4: No workers are observed. Only soldiers are observed or the remnants of the harder soldier head capsules.
- Stage5: Sometimes fungal blooms are noted, and on rare occasions a “dead prawn” smell is detected in the vicinity.

It is not always possible to observe all these key performance indicating stages. When termite colonies reach Stages 3 &/or 4, they are at the point of collapse.

2.9 By calculating and recording the amount of termite bait consumed and by noting the physical and behavioural changes in the termites, you can reasonably determine when the termite colony has been eliminated.

2.10 The sharing of this information and experience with the client, working to a plan with key performance indicators and carrying out regular monitoring allows the professional pest manager to develop a true partnership with the client- the client is involved in the process. It should become easier to recommend and implement further worthwhile non-chemical control and risk management initiatives.

2.11 Other aspects of the termite colony's natural biology and behavior will also affect how quickly and when the termite colony will collapse. In many cases they will consume more bait than what is required to control them. In some situations, there may be more than one colony involved. In others, *e.g. Schedorhinotermes* infestations, control is likely to take months as the termites may not moult for long periods of the year, especially in winter. In circumstances such as this, it is recommended that a treatment using non-repellent termiticides be carried out.



## NEMESIS TERMITE BAITING and MONITORING STATIONS

2.12 There are several types of Station available for use with the NEMESIS TERMITE BAITING and MONITORING SYSTEM. Nemesis Termite Bait can be used in other purpose designed termite baiting and monitoring Stations or in other proprietary systems.

2.13 These are the available Termite Baiting and Monitoring Stations:

- **ABOVE GROUND STATIONS: NEMESIS AG**
- **IN GROUND STATIONS: NEMESIS IG**
- **STATIONS FOR PLACEMENT IN CONCRETE OR PAVING: NEMESIS IC**



### ABOVE GROUND STATIONS: NEMESIS AG

2.14 PCT International Pty Ltd supplies an above-ground Station designed to be located on and attached to active termite feeding sites. The Station is made out of grey moulded flexible

polyethylene. It has built-in anchorage points, and is tamper evident. It has a series of circular knockout points which can be sealed with grommets (supplied). These allow a wide range of fixing/interface orientations and flexibility for filling and inspection.

### DIMENSIONS:

Length: 220<sup>mm</sup>  
Depth: 50<sup>mm</sup>  
Width: 115<sup>mm</sup> at widest.



### IN GROUND STATIONS: NEMESIS IG

2.15 PCT International Pty Ltd supplies a plastic inground Station which is designed to be readily stackable/transportable, taking up minimal space in storage. The Station is made of moulded, rigid high impact styrene, with a black body and black lid. It also



incorporates two timber inserts which have been designed to afford a maximum surface area for termite attraction whilst also being easy to prepare and install in the Stations. The mass of the timber inserts provided with the NEMESIS TERMITE MONITORING & BAITING SYSTEM is greater than most other comparable systems. A palm sized multi-position tool is supplied for opening and closing the tamper evident lid.

#### DIMENSIONS:

Length /depth into soil: 165.5<sup>mm</sup>

Width (tapered): 102<sup>mm</sup> at top. 70<sup>mm</sup> at bottom

Two timber inserts shaped to fit approx 35<sup>mm</sup> across and 80<sup>mm</sup> deep

Payload for bait: 70<sup>mm</sup> long with top being approx 97<sup>mm</sup> wide and bottom being approx 82<sup>mm</sup> wide. Bait can fill gaps and grooves in the Station.

The Station has been designed so that the timber inserts will have significant soil contact when installed. The inserts are manufactured from sections of Mountain Ash (*Eucalyptus regnans*) and Alpine Ash (*Eucalyptus delegatensis*).



IG station with the timber inserts oriented for maximum soil contact.

#### IN CONCRETE OR PAVING: NEMESIS IC

2.16 For installations underneath paving or through concrete, a stainless steel (304) cap is available which ensures an O-ring tight waterproof seal and a flush fit with the finished ground level surface. Non slip versions with a textured surface are recommended for high pedestrian traffic areas.

Hole size to be drilled / core cut: 82<sup>mm</sup>

Concrete drill or core cutter to be used: 80<sup>mm</sup>

Width of cap flange on surface at finished ground level: 100<sup>mm</sup>

Force to close / tighten cap: approx. 9kgs

It is recommended that soil and swarf be removed out of the borehole. You need to place the timber inserts into soil and have enough room above the inserts to place bait. (You can place the bait with a 75mm space). It is recommended that you tie two timber inserts together with twist-tie, creating a loop handle and place this bundle in the void.



IC Stations sealed with stainless steel caps.



# 3. HEALTH & SAFETY with NEMESIS BAIT:

3.1 NEMESIS TERMITE BAIT is an odourless white powder containing 1.0 g/kg Chlorflurazuron. The product is not a scheduled poison according to the criteria of the NHMRC and is classified as non-hazardous according to the criteria of Worksafe Australia. You MUST always read the product label and observe all precautions thereon. Additional information is listed on the Safety Data Sheet (as shown below). It is also available from PCT on request (toll free 1800 630 877) or alternatively it can be downloaded as a PDF file from our web site at <http://pcti.com.au>

## Section 1 - Identification of the Material and Supplier

**PCT Holdings Pty Ltd**                      **Phone: 1800 630 877**  
**5/74 Murdoch Circuit**  
**Acacia Ridge QLD 4110**  
**AUSTRALIA**

**Chemical nature:** Chlorfluazuron-based termiticide.  
**Trade Name:** **Nemesis Termite Bait**  
**APVMA Code:** 58922  
**Product Use:** An insect development inhibitor type insecticide for use as part of a termite interception and baiting system as per the product label.

**Creation Date:** **October, 2015**  
**This version issued:** **October, 2015** and is valid for 5 years from this date.

**Poisons Information Centre: Phone 13 1126 from anywhere in Australia**

## Section 2 - Hazards Identification

### Statement of Hazardous Nature

This product is classified as: N, Dangerous to the environment. Not classified as hazardous according to the criteria of SWA.

Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA or IMDG/IMSBC criteria.

**Risk Phrases:** R52. Harmful to aquatic organisms.

**Safety Phrases:** S8, S61, S3/7/9, S36/37. Keep container dry. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Keep container tightly closed in a cool, well ventilated place. Wear suitable protective clothing and gloves.

**SUSMP Classification:** None allocated.

**ADG Classification:** None allocated. Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA or IMDG/IMSBC criteria.

**UN Number:** None allocated

**GHS Signal word: NONE. Not hazardous.**

### HAZARD STATEMENT:

H402: Harmful to aquatic life.

### PREVENTION

P102: Keep out of reach of children.  
P262: Do not get in eyes, on skin, or on clothing.  
P273: Avoid release to the environment.  
P281: Use personal protective equipment as required.

### RESPONSE

P352: Wash with plenty of soap and water.  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P370+P378: In case of fire, use carbon dioxide, dry chemical, foam, water fog.

### STORAGE

P410: Protect from sunlight.  
P402+P404: Store in a dry place. Store in a closed container.  
P403+P235: Store in a well-ventilated place. Keep cool.

### DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

## Emergency Overview

**Physical Description & Colour:** White powder.

**Odour:** No odour.

**Major Health Hazards:** no significant risk factors have been found for this product.

## Section 3 - Composition/Information on Ingredients

Ingredients	CAS No Conc,% TWA (mg/m <sup>3</sup> )	
Chlorfluazuron	71422-67-8 1g/kg not set not set	
Other non hazardous ingredients	secret	to
100	not set not set	

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

## Section 4 - First Aid Measures

### General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

**Inhalation:** First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

**Skin Contact:** Gently brush away excess particles. Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.

**Eye Contact:** Quickly and gently brush particles from eyes. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed, while holding the eyelid(s) open. Obtain medical advice immediately if irritation occurs. Take special care if exposed person is wearing contact lenses.

**Ingestion:** If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

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## Section 5 - Fire Fighting Measures

**Fire and Explosion Hazards:** The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. This product, if scattered, may form flammable or explosive dust clouds in air. Fire decomposition products from this product are likely to be toxic and corrosive if inhaled. Take appropriate protective measures.

**Extinguishing Media:** In case of fire, use carbon dioxide, dry chemical, foam, water fog.

**Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade. Do not scatter spilled material with high pressure water jets.

**Flash point:** Combustible solid.

**Upper Flammability Limit:** No data.

**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** Combustible solid.

## Section 6 - Accidental Release Measures

**Accidental release:** Minor spills do not normally need any special cleanup measures. In the event of a major spill, prevent spillage from entering drains or water courses. As a minimum, wear overalls, goggles and gloves. Suitable materials for protective clothing include cotton, rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective glasses and, preferably, goggles. If there is a significant chance that dusts are likely to build up in cleanup area, we recommend that you use a suitable dust mask.

Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Consider vacuuming if appropriate. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused

material may be found on the label. If there is any conflict between this SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## Section 7 - Handling and Storage

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

**Storage:** Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Check packaging - there may be further storage instructions on the label.

## Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

### SWA Exposure Limits TWA (mg/m<sup>3</sup>) STEL (mg/m<sup>3</sup>)

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Chlorfluazuron is set at 0.005mg/kg/day. The corresponding NOEL is set at 0.56mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2014.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

**Ventilation:** This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

**Eye Protection:** Eye protection such as protective glasses or goggles is recommended when this product is being used.

**Skin Protection:** The information at hand indicates that this product is not harmful and that normally no special skin protection is necessary. However, we suggest that you routinely avoid contact with all chemical products and that you wear suitable gloves (preferably elbow-length) when skin contact is likely.

**Protective Material Types:** We suggest that protective clothing be made from the following materials: cotton, rubber, PVC.

**Respirator:** If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable dust mask.

Safety deluge showers should, if practical, be provided near to where this product is being handled commercially.

## Section 9 - Physical and Chemical Properties:

<b>Physical Description &amp; colour:</b>	White powder.
<b>Odour:</b>	No odour.
<b>Boiling Point:</b>	Not applicable.
<b>Freezing/Melting Point:</b>	Decomposes before melting.
<b>Volatiles:</b>	No specific data. Expected to be low at 100°C.
<b>Vapour Pressure:</b>	Negligible at normal ambient temperatures.
<b>Vapour Density:</b>	Not applicable.
<b>Specific Gravity:</b>	No data. Bulk density about 0.25
<b>Water Solubility:</b>	Miscible.
<b>pH:</b>	No data.
<b>Volatility:</b>	Negligible at normal ambient temperatures.
<b>Odour Threshold:</b>	No data.
<b>Evaporation Rate:</b>	Not applicable.
<b>Coeff Oil/water Distribution:</b>	No data
<b>Viscosity:</b>	Not applicable.
<b>Autoignition temp:</b>	No data.

## Section 10 - Stability and Reactivity

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** water, strong acids, strong bases, oxidising agents.

**Fire Decomposition:** Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form hydrogen chloride gas, other compounds of chlorine. May form hydrogen fluoride gas and other compounds of fluorine. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

**Polymerisation:** This product will not undergo polymerisation reactions.

## Section 11 - Toxicological Information

### Local Effects:

**Target Organs:** There is no data to hand indicating any particular target organs.

### Acute Toxicity:

- **Oral:** LD<sub>50</sub> (rat) >5000 mg/kg approx.
- **Inhalation:** LC<sub>50</sub> (rat) >7.0 mg/L exposure time 4h method
- **Dermal:** LD<sub>50</sub> (rat) >2000 mg/kg
- **Eye Irritation:** (Species - rabbit) slight irritant
- **Skin Irritation:** (Species - rabbit) non - irritant
- **Skin Sensitisation:** (Species - guinea pig) non-sensitising

## Potential Health Effects

### Inhalation:

**Short Term Exposure:** Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

**Long Term Exposure:** No data for health effects associated with long term inhalation.

### Skin Contact:

**Short Term Exposure:** Available data indicates that this product is not harmful. It should present no hazards in normal use. In addition product is unlikely to cause any discomfort in normal use.

**Long Term Exposure:** No data for health effects associated with long term skin exposure.

### Eye Contact:

**Short Term Exposure:** This product is believed to be mildly irritating, to eyes, but is unlikely to cause anything more than mild transient discomfort.

**Long Term Exposure:** No data for health effects associated with long term eye exposure.

### Ingestion:

**Short Term Exposure:** Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.

**Long Term Exposure:** No data for health effects associated with long term ingestion.

### Carcinogen Status:

**SWA:** No significant ingredient is classified as carcinogenic by SWA.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** No significant ingredient is classified as carcinogenic by IARC.

## Classification of Hazardous Ingredients

Ingredient	Risk Phrases
No ingredient mentioned in the HSIS Database is present in this product at hazardous concentrations.	

## Section 12 - Ecological Information

This product is harmful to aquatic organisms.

### Ecotoxicity Effects:

**Acute Toxicity – Fish:** LC<sub>50</sub> for carp is >300 mg/L.

**Acute Toxicity –Bees:** LD<sub>50</sub> for bees is >100 µg/L

**Acute Toxicity –Birds:** LD<sub>50</sub> for Japanese Quail is >2510 mg/Kg

### Further ecological information:

**Ecological notes:** This product is considered to be non-toxic to bees & birds. This product is highly toxic to aquatic invertebrates. Bait should not be placed in any area where, because of the movement of water, it could become submersed or could be



washed out of a station. Particular care should be taken not to place Nemesis in an area where it could be washed into bodies of water containing aquatic life, such as ponds or streams.

### Section 13 - Disposal Considerations

**Disposal:** Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

### Section 14 - Transport Information

**UN Number:** This product is not classified as a Dangerous Good by ADG, IATA or IMDG/IMSBC criteria. No special transport conditions are necessary unless required by other regulations.

### Section 15 - Regulatory Information

**AICS:** All of the significant ingredients in this formulation are compliant with NICNAS regulations.

### Section 16 - Other Information

**This SDS contains only safety-related information. For other data see product literature.**

#### Acronyms:

<b>ADG Code</b>	Australian Code for the Transport of Dangerous Goods by Road and Rail (7 <sup>th</sup> edition)
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>SWA</b>	Safe Work Australia, formerly ASCC and NOHSC
<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Code</b>	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
<b>IARC</b>	International Agency for Research on Cancer

**NOS**

**NTP**

**R-Phrase**

**SUSMP**

Not otherwise specified

National Toxicology Program (USA)

Risk Phrase

Standard for the Uniform Scheduling of Medicines & Poisons

**UN Number**

United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS

OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

**Please read all labels carefully before using product.**

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (December 2011)

## 4. HANDLING & STORAGE CONSIDERATIONS:

4.1 NEMESIS TERMITE BAIT is supplied in 2kg cartons containing 20 re-sealable 100gm packs to facilitate cleanliness, measurement, mixing and record keeping. It is a very light powder, similar to flour. It is easily blown about by wind, so ensure you open the pack in a calm, dry area. Place a drop sheet under the material and equipment when mixing it indoors.

4.2 It is ESSENTIAL that both the Nemesis Termite Bait and associated treatment components and tools are kept free from all contaminating substances. Ensure that Nemesis Termite Bait and other system components are kept in sealed storage units well away from all pesticides and pesticide measuring, mixing and application equipment. Double wrapping or sealing would be an effective means of achieving this, or consider setting up a special purpose vehicle or trailer.

4.3 The presence of odours from tobacco, aftershaves, deodorants, pesticides, etc. on the Stations is highly likely to deter termites from entering and feeding. Do not bait while wearing insecticide contaminated clothing. Use only distilled or filtered water (non-chlorinated) for mixing the bait. You do not need to use stirring sticks or buckets. If you do decide to use them, make sure that they are not contaminated with pesticides. It is highly recommended that you mix water with the bait INSIDE the plastic bag/sachet as this reduces the risk of contamination and is more convenient. You should always wear disposable latex or rubber gloves while handling and installing the Stations and timber inserts to prevent tainting and possible termite avoidance of the Stations. Do not use the same digging tools used to create chemical barriers for Nemesis installations. Termites are sensitive to even the slightest odors.

4.4 You can prepare termite bait in the original sachet before taking it into a roof void or sub-floor. If it is not needed, you can save the bait and re-use it on another job. You can take sachets/bags of termite bait plus a small bottle of water in your overall pockets more

conveniently with the Nemesis system and make your treatment decision at the “coalface”. Reseal any unused opened product (to be used later) in the original ziplock pack. You can either use the bag as a bait station or insert the folded plastic sachet into the above-ground station. After folding it in half, cut a small ‘X’ on the outside of the bag to allow easy termite access to the bait. It is important to orientate the small portion of moist bait next to the termite entry point.

4.5 NEMESIS TERMITE BAIT is easily cleaned up using just a cloth and water. It is often best to let it dry and then remove it with a vacuum cleaner or a stiff brush and pan. Prevent entry of spilled matter into drains and waterways.



# 5. INSTALLATION METHODS and PROCEDURES:

## RECOMMENDED EQUIPMENT AND TOOLS:

5.1 This is a **comprehensive** list of items which are needed or may be useful for NEMESIS installations and maintenance.

- Clipboard and pen
- Site Plan - for Station location
- Torch - strong bright beam (spares recommended)
- Termatrac™ Unit & Moisture Meter - for locating evidence of possible termite activity and/or conducive conditions & placement of Above-ground Stations (strongly recommended)
- Various hand tools - screwdrivers, pliers, hammer, etc. for spot repairs and accessing concealed areas
- Scratch Awl - for inspections and probing galleries, mudding and shelter tubes
- Gyprock saw - for accessing wall cavities
- Specimen bottles (with alcohol) - to take samples of termites for later identification
- NEMESIS TERMITE BAITING and MONITORING SYSTEM components
- Latex disposable gloves - to avoid contaminating the inserts or Stations
- Plastic collar - (optional) for excess soil removal while drilling holes for Inground installations.
- Fluorescent dots - (optional) to place on foundation walls to help locate Stations
- Surveyor's Flags - (optional) to locate In-ground Stations
- Auger/Post Drill - for drilling In-ground Station holes
- Auger bits - for creating In-ground Station holes as well as cleaning out concrete core bore holes (100<sup>mm</sup> for into soil and 75<sup>mm</sup> for clearing in-concrete bore holes)
- Trenching shovel - to dig holes for Stations.
- Black & White indelible markers - for marking walls etc. and black Station lids
- Stiff paint brush - to remove debris from Station lids

- Broom - to sweep up waste materials after installation
- Heavy duty hexagonal pinch bar - (recommended) for use in stony ground for Station placement
- Tape measure - (recommended) to assist with Station location
- Selley's Knead-It - for pipe repairs
- Additional timber inserts - to replace old inserts
- Long nose pliers - to remove inserts from IG Stations
- Stainless Steel Plugs - for sealing concrete holes
- Cordless drill & drill bits
- Nut driver - to unlock/lock stainless steel concrete plugs
- Phillips-head screws 6g x 20<sup>mm</sup> & 6g x 40<sup>mm</sup> self-tapping - for attaching Above-ground Stations
- Phillips-head driver for power drill (100<sup>mm</sup> long) - for Above-ground Stations
- Selley's 'No More Gaps™' - for sealing Above-ground Stations to surfaces
- Stanley knife - to cut access channels
- Suitable water container (20L recommended)
- Clean mixing containers/buckets - for mixing bait
- Scoop - for measuring out bait
- Stiff spatula - for mixing bait
- Syringe - for injecting liquid, diluted mixture of bait into galleries
- Professional caulking gun - to apply bait into Above-ground Stations
- Funnel - to apply bait into Above-ground Stations
- Water spray bottle - for moistening bait needing re-hydration in Stations
- Cloths - for wiping up spills
- Drop sheets - to prevent spillage on carpets, etc.
- Dust pan and brush - for site clean-up
- Spare buckets - for site clean-ups
- Duct Tape - to seal access holes and assist with Above-ground Station placement
- Temperature Probe - (optional) for determining if termite activity in trees has ceased
- Drill bit 10-14<sup>mm</sup> diameter x 400<sup>mm</sup> (or longer) - for test drilling trees
- Copper Napthenate - to protect trees from fungal entry after drilling
- Sealant - to reseal drill holes in trees
- Combined Garden soil pH & moisture meter -to identify likely termite monitor positions.

## NEW SITE INSTALLATION:

5.2 It is important to carry out a termite inspection (and prepare a written report with a full set of recommendations) prior to agreeing to undertake a limited or integrated termite treatment and/or monitoring program. This is in the best interests of both you and the property owner- the client needs to make an informed decision- they should be offered a broad range of options. The client also needs to understand the benefits, the likely outcomes and the limitations of the proposed treatment. If there is a possibility of termite damage (either hidden or visible) there must be a specific recommendation for the client to engage the services of a building expert to ascertain the extent of structural damage and integrity. This needs to be expressed fully in writing.

5.3 SITE MAP: A site map indicating suspected or known areas of termite activity and/or damage should be drawn up either prior to or on the day of installation, with proposed Station locations marked on it. (Be aware of possible site changes since the original quotation). PCT provides a suitable form for this purpose— it is available either on a CD or from the NEMESIS website. Check for visible and anecdotal evidence of the presence and location of power & telephone cabling, water & gas pipes, drains and sewage.

5.4 IN GROUND STATIONS: Lay the prepared NEMESIS IG Stations on the ground around the structure at the proposed points of installation, and review these preliminary locations according to the Station location guidelines below. If the review necessitates any Station placement changes or additions, make them at this time.

5.5 INGROUND STATION LOCATION/ POSITIONING: Stations should be located close to the structure, with the optimal location being along the roof drip line- *i.e.* a line extending around a building directly underneath guttering. If the building has gutters extending past the external walls, locating Stations slightly under the eaves will reduce the amount of moisture that may enter the Station. Lawn areas are not likely to promote or support termite activity and should be avoided if possible when choosing sites for inground Stations. The ideal Station distance from the walls of the structure is along a

line 600<sup>mm</sup> perpendicularly out. However, do not place them in closer than 450<sup>mm</sup>, especially if the structure has been previously treated with a soil termiticide. Footings could also be an obstacle to installation closer than 450<sup>mm</sup>. Note the following:

1. There should be at least one In-ground Station for every five perimeter lineal metres. The optimal Station loading is one for every three perimeter lineal metres. The actual Station to Station distance will be subject to conditions encountered at individual sites.
2. Ensure that ALL sides of the structure are dealt with wherever possible. *E.g.*, even though termites may be attacking only the western side of the property, the colony may be located to the east.
3. Place Stations strategically- don't simply place Stations strictly by formula every three metres- place them where termites are more likely to be tracking.
4. Install Stations at or near points of known or suspected termite entry into the structure. These Stations are intended to intercept termites actively attacking the structure and are the most important inground Station installations you will make. Therefore choose the number and location of these Stations carefully. The closer you can place the Stations to the point of any termite entry into the structure, the higher the probability that you will intercept the colony and successfully treat it.
5. If an area of accessible ground is not located within 3m of a point of known termite entry (due to a surface such as a concrete slab or paved area), it will be necessary to create access through that surface, close to the point of known entry, and establish a Station there. Placing inground Stations with or without the lid directly underneath pavers is a useful technique.
6. Install Stations at no more than 1.5m from points of known, suspected or likely termite foraging. Such places may include areas with concentrations of cellulose-containing debris, such as mulch or wood scraps in contact with the ground, areas of moderate soil moisture, shaded areas, areas containing plant root systems, drain traps, visible termite foraging tubes, stored firewood, wooden parts of the structure in contact with the ground, retaining walls, etc. Station placement near compost mounds is

recommended since termites are frequently intercepted there.

7. Do not underestimate the potential of termites to forage widely. Termites find the following environmental features attractive:

1. Timber or cellulose based material with a moisture content between 12 to 15%.
2. Soil that is aerated so that they can travel easily and can breathe. They need oxygen as well as aerobic nitrogen (for creating amino-acids).
3. Soil with organic loading.
4. Soil with 12 to 15% moisture content.
5. Acidic soil (approx. pH6).

Enhance the effectiveness of your stations by recreating these environmental features. Dig holes larger than the IG stations (using soil augers to produce tight polished holes compresses the soil, decreasing the available air and water and makes the soil harder to travel through. After digging a bigger hole, remove rubbish and debris. Line the bottom of the hole with gravel. Place the station in the hole and add soil with a high organic load or potting mix. Wet the soil, the timber and the station. This greatly increases the soil “shadow” of each Inground station.



Soil hole prepared for IG Station.

8. Stations may also be placed in subfloor crawl spaces, preferably close to points of termite entry. This is a consideration for terrace housing or zero boundary line properties.

9. Where soil is shallow, the IG station can be installed to the depth of the termite entry ports so that they are covered at finished ground level. Soil should be mounded up against the station, forming the apex of the mound at the station collar.

### STATION PLACEMENT CONSIDERATIONS:

5.6 Out of sight: Wherever possible, place Stations in areas where they are inconspicuous, to minimize tampering and accidental damage. Although the Stations are designed to make tampering more visible, they are not tamper-proof. One of the design features of the NEMESIS IG Station is the provision for the use of ground tethers, but they can still be pulled out of the ground. The best way to reduce this risk is to install Stations out of plain view.

5.7 Inspection access: However, do not place them so they cannot be readily found during follow-up inspections. The goal is to place them where they do not draw attention to themselves, but can be found when necessary. Use fluorescent dots on the wall of the building or surveyors flags to indicate where concealed Stations are located, and mark the Station’s position accurately on the Site Plan.

5.8 Lawn Areas: Lawn areas are undesirable for Station placement for these reasons:

1. Stations are particularly visible.
2. Stations are susceptible to lawnmower damage.
3. Evidence suggests that termite foraging potential is lower in lawn areas compared to elsewhere.
4. Many types of chemicals are routinely applied to lawns that may discourage termite foraging.

5.9 Areas of pesticide application: Areas where pesticides, particularly liquid termiticides, may have been applied to the ground, such as within 450<sup>mm</sup> of the foundation wall, should be avoided. Termiticides (especially *bifenthrin*) may be repellent and could seriously undermine the effectiveness of NEMESIS TERMITE BAIT in controlling termites. If a regular pest management service



involving exterior application of pesticides is performed at the structure, avoid spraying the chemicals anywhere near the Stations. If common black or brown ants are a problem in a Station, appropriate control measures around the Station may be necessary. This can include the use of ant baits (We recommend InTice™ Sweet Ant Gel), or else boiling water, to discourage ant activity around the Stations.

5.10 **Excessive Moisture:** Areas of excessive moisture should be avoided. If the soil is saturated in an area for a considerable part of the year, it is unlikely that you will intercept termites there. Termites will avoid these areas **because** the soil is saturated. Bait placed in an area of excessive moisture may become unpalatable to termites when it becomes saturated with water and/or is affected by decay fungi. Damp areas are attractive to termites- it is only excessively moist areas that are not.

## CREATING THE IG STATION HOLE

5.13 A power-driven earth auger can be used for drilling holes in soil, especially in hard, compacted soil situations. However, in most cases, this procedure is not recommended. Creating holes larger than the station with hand implements is recommended. You can use either a hand auger, post hole digger or trenching shovel. Take into account the location of any concealed services, pipes or cables. When preparing the hole for the in-ground Station, make the hole slightly deeper than the Station, thereby creating a sump area under the installed Station. The NEMESIS IG Station is 102<sup>mm</sup> wide at the top. If a 100<sup>mm</sup> auger is used, a reasonably tight fit should be achieved if that is required because of conditions on site.



Power and hand soil augers.

5.14 Soil displaced by the excavation process must be cleaned up in exposed areas where Stations are installed. A circular plastic “collar” can be laid completely around the circumference of the bit before boring begins, so that excavated dirt will fall onto the collar as it emerges from the hole. Care must be taken that the collar does not become entangled in the bit as it rotates. This risk is minimised if the collar lies flat on the ground and lies no closer than 25<sup>mm</sup> from the edge of the hole that the auger is forming.

5.15 Excess soil that is not repacked around the Station during installation remains on the collar. This soil can be placed into a collection bucket for disposal in another area simply by picking up the collar. It is useful to carry a supply of clean soil for packing around in-ground Stations where stones, rocks and rubbish are removed and more fill is needed.

## STATION PLACEMENT/ INSERTION

5.16 Place the two timber inserts into the IG Station, noting the correct orientation for maximum soil contact (see previous photograph showing this). It may be useful to drill small holes into the top of the timber inserts to allow the placement of screw eyes or cup hooks which could help with removal IF the timber inserts swell as a result of excess moisture.

5.17 Place the Station in the prepared hole and tamp the earth at the bottom of the hole with the Station base. Add or remove soil as necessary to achieve the desired Station depth. The Station can be placed at almost any depth in the ground; however, the deeper it is placed, more care must be taken to ensure cover installation and removal remains easy.

5.18 Press the Station into the hole until the flange makes contact with and lies on top of finished ground level. Install the Station using ground tethers if additional security is required. As the Station is going into the earth, push soil down against the sides of the Station so that extra earth is placed between the Station and the sides of the hole. This helps ensure that contact between the earth and the Station sides is as complete as possible.

5.19 Clean up the Station & secure the cover. Locking or sealing/securing with tamper evident plastic electrical ties is optional.

## IN-CONCRETE STATION INSTALLATION

5.20 Frequently, buildings have concrete paths or paving against external walls, which will require core drilling in order to place the Stations in the ground underneath.

5.21 It is necessary to surround the building with Stations every three metres or so, INCLUDING these concrete areas. The recommended hole size in concrete is 76<sup>mm</sup> - 82<sup>mm</sup> diameter, using a concrete coring device or drill.

5.22 We recommend that you use a contractor to drill the holes. (see Concrete Sawing, Drilling, Grinding and Breaking in the Yellow Pages). You should first determine where you want the Stations to be placed, taking into account the location of any concealed services, pipes or cables, and mark with chalk or similar where the contractor should drill the holes.

5.23 After the concrete is cored, it will be necessary to remove earth at the bottom of the core to form a larger and deeper bait cavity. Earth can be removed from the hole with either a drill mounted or hand auger.

5.24 You might consider investing in your own concrete coring equipment. A skilled operator can set up and form a single opening in about five minutes. A source of water is necessary to keep the bit cool.



Using concrete coring drill for station placement.

5.25 After the hole is drilled and the cavity formed, the next step is putting the timber inserts in place. Depending on how deep the cavity is, it is possible to place two or more sets of inserts into the cavity on top of each other. Remember to leave sufficient space to allow for the placement of NEMESIS TERMITE BAIT on top. If the sides of the cavity are not stable, wrap material such as unbleached cardboard around the timber inserts before placing them into the cavity. Again it may be worthwhile to drill small holes into the top of the timber inserts to allow placement of screw eyes to assist with future removal.

5.26 Access to the cavity is then secured using an expandable O-ring stainless steel plug that provides a waterproof seal for the cavity. Don't forget to dispose of the concrete cores properly! It may be desirable for the client to retain some cores to assist with plugging the hole in the event of future Station removal.



IC Station stainless steel cap.

## MARKING THE LOCATION OF STATIONS

5.27 All Station locations should be clearly marked on an accurate site map & regularly updated. (We have a downloadable version on our Nemesis website or on CD).

5.28 Placing a fluorescent adhesive dot on the external wall of the structure at a point directly opposite the location of the Station is one method of making future Station location easier. These dots should be small and inconspicuous. They should be placed slightly above ground level at a point opposite the Station so that if a straight line was drawn out at right angles from the wall, the line would go over the centre of the Station.

5.29 A surveyor's flag can be installed adjacent to a station for easy location in areas where vegetation, leaf litter or similar might normally conceal it.

## DOCUMENTATION REQUIREMENTS:

- A termite or timber pest inspection report [consult either AS 4349.3-1998 OR AS 3660.2-2000 for required components (correct at the time of writing)].
- A treatment specification/ quotation (consult AS 3660.2-2000 for required components). This includes a full range of recommendations as well as a list of limitations.
- Reports for every Site visit.
- Durable treatment notice attached to structure (consult AS 3660.2-2000 for required components)
- Treatment Certification for every treatment. This includes a drawing which details areas treated & areas of activity/damage.
- Ensure that details are kept of any job cancellations or variations, and that the client is clearly advised about the consequences of their decision. Again, copies of these forms are available from our website or on CD).

5.30 Records must be created, maintained and kept by the accredited Company for each job, detailing bait batch numbers, amount used and the name of the accredited applicator, for PCT to provide full product support.

## STATION NUMBERING

5.31 It is advisable to number Stations after they have all been installed, for record keeping and future servicing. The lids can be numbered with an indelible marker pen or a white paint marker prior to Station installation; however if this is done, keep them separate from the Stations until after installation. If additional Stations are placed near existing ones, it is suggested that you designate the next Station by adding a letter of the alphabet, *e.g.* a new Station installed near to number 1 would be designated "1A".

## SITE PLAN

5.32 Finally, carefully mark the actual Station locations and numbers on the Site Plan. An accurate Site Plan is of fundamental importance for future ease of use at the Site – especially if different operators will be checking the Stations after installation.

It is recommended that these letters are used as a prefix on Site Plans:-

- IG for in-ground Stations.
- AG for above ground Stations
- IC for in concrete Stations

## INSPECTION SCHEDULING

5.33 Where termites are yet to be detected as being active, the NEMESIS STATIONS should be inspected at eight weekly intervals. Keep in mind that you may inspect more frequently (especially in summer), but never less. Termites foraging in the vicinity of the Stations will find and begin feeding on the timber inserts when they enter the Station.

5.34 To inspect a Station, remove the lid and with the aid of a torch, visually examine the interior, being careful to minimize disturbance of the timber inserts. Evidence of termite activity in the Station can vary. It may include the presence of damaged timber inserts, termite shelter tubes crisscrossing the face of a timber insert, or other termite mudpacking. Usually shining a torch into the Station will allow you to determine if termites are present. If you note workings you may need to probe carefully with an awl or a sharp blade. If termites are present, even in small numbers, bait the Station with NEMESIS TERMITE BAIT.

5.35 If termites are not present, inspect inserts for excessive decay or moisture saturation. Decayed inserts in unbaited Stations should be replaced. Inserts containing excessive moisture should also be replaced; however if the earth surrounding the insert at the time of inspection is wet, or if water is standing in the bottom of the Station, insert replacement should be delayed until such time as the moisture problem has abated.

5.36 If experience in your area shows that excessive moisture in inserts dissipates naturally, it may be desirable to leave the inserts in place even if they are saturated, provided they are not decayed. If moisture conditions do not improve over time, it may be necessary to reposition the Station.

# 6. MAINTENANCE & SERVICING OF STATIONS:

## USING NEMESIS BAIT WITH IN-GROUND STATIONS:

### INSPECTING AND RE-BAITING PREVIOUSLY BAITED IN-GROUND STATIONS:

6.1 Freshly baited in-ground Stations need to be re-inspected approximately 3 weeks after NEMESIS TERMITE BAIT is installed. Thereafter, baited Stations should be checked every 3 – 6 weeks. During these inspections, consumed NEMESIS TERMITE BAIT is replaced so that bait is always present in the Station for as long as termites continue to feed in the Station. To inspect a baited Station, remove the Station lid and visually examine the interior of the Station for active termites, carefully probing the bait with a screw driver if necessary to determine if they are present.

6.2 If the bait appears to be uneaten, gently probe the surface of the bait- you may find that the termites have consumed most of the NEMESIS TERMITE BAIT and left only a thin undamaged veneer on the top.

#### **If Termite Activity is Present...**

6.3 If termites are present and significant consumption of bait has occurred, rebait the Station. If termites are present, but bait consumption has been minimal, do not rebait the Station- simply remoisten the NEMESIS TERMITE BAIT by spraying it with clean water from a plastic spray bottle.



IG Station with dried out bait.

#### **If Termite Activity is Not Present...**

6.4 Sooner or later, termites will no longer be active in the Station. The reasons for this may be varied, but obviously the desirable scenario is that the colony has been substantially suppressed or eliminated. However there may be other reasons why the colony has abandoned feeding, such as low temperatures and excess moisture. Decide what to do based on the information below.

### LESS THAN 60 DAYS SINCE ACTIVITY LAST OBSERVED

#### **Bait Condition good...**

6.5 If it is less than 60 days since termites were last seen in the Station and the bait is in good condition (not saturated and not decayed), no action is required other than to keep the NEMESIS TERMITE BAIT moist- replace the lid. Low temperatures may be a factor, however it is still advisable to leave the bait in position.

#### **Bait Condition bad...**

##### *Water Saturated bait*

6.6 Water saturated bait can be unattractive to termites. If termites were noted in the Station less than 60 days ago but are not currently present and the bait is wet, replace the bait. However, if the conditions that created the excess moisture are still present, it is better to leave the bait in place and recheck it when conditions improve. In some regions, bait in a Station may dry out enough to become palatable to termites again without being removed. If this is likely, leave the bait in the Station.

##### *Decayed Bait*

6.7 Termites are fussy eaters and will avoid bait once it has reached a certain point of decay. If termites were present in the Station less than 60 days ago but are currently not present, and the bait has decayed, replace it with fresh bait. The appearance of mould or fungi on the bait surface is a sign of bait decay.

### MORE THAN 60 DAYS SINCE ACTIVITY LAST OBSERVED

6.8 If termites have not been feeding for sixty days, and you do not think you have eliminated the colony; it may be appropriate to reposition the Station to attempt re-interception. If it does not appear that excess moisture or low temperatures are a factor, replace the Station.

##### *Low Temperature*

6.9 If termites have abandoned the Station in periods of low temperatures, it is best to leave the Station and bait in place and recheck when the weather is warmer. Note that a drier bait mix may

be more attractive to termites in cooler weather. It can be advantageous to irrigate the bait with warm water.

#### *Water Saturated bait*

6.10 Water saturated bait can be unattractive to termites. In this case, replace the bait. However, if the conditions that created the excess moisture are still present, leave the bait in place and recheck it later. In some areas, bait in a Station may dry out enough to become palatable to termites again without being removed. If this is likely in your area, leave the bait in the Station for an additional inspection.

#### *Decayed Bait*

6.11 This situation presents the following dilemma- Have the termites stopped eating because the bait is decayed or is the bait decayed because the termites have stopped eating? If there is other evidence that the colony may not be eliminated, remove the decayed bait and rebait. Perform one or two additional inspections before considering repositioning the Station.

### **USING NEMESIS TERMITE BAIT WITH IN-CONCRETE STATIONS**

6.12 These are treated in the same manner as in-ground Stations. After termites are found infesting the timber inserts, the NEMESIS TERMITE BAIT is placed in the cavity in the same way as for in-ground Stations. When placing the bait, do not move or remove the inserts, to ensure minimal disturbance of the foraging termites.

### **STATION CARE AFTER INITIAL INSTALLATION**

6.13 Stations may need to be repositioned from time to time. If so, record the new location on the site plan. Reposition the location marker on the wall & refill the hole at the old Station site.

6.14 If a Station, after repeated inspections, is found to always contain excess moisture (water standing at the bottom of the Station, etc.), relocate it, if possible, to a nearby area where the soil is better drained. Alternatively, modify the Station site to prevent water from collecting in the Station by, e.g., creating a sump filled with small rocks in the area under the installed Station.

6.15 If no termite activity is ever found in a Station after many inspections, and termite activity is still suspected in the area, consider a relocation of that Station.

### **INSTALLING ADDITIONAL STATIONS**

6.16 Once termite interception has occurred at a Station, and bait consumption has begun, the placement of one or more supplemental Stations in the immediate vicinity of the infested Station(s) may be desirable so that bait consumption by the colony can be maximized. The best strategy is to wait 6 - 8 weeks after feeding begins and then to add supplemental Stations at that time if you observe that feeding has continued at a rapid rate (However, they can be added at any time). When adding Stations, be sure to follow all the procedures involved in making an initial installation and update the Site Plan.

### **USING NEMESIS WITH ABOVE-GROUND STATIONS:**

6.17 Above-ground Stations are the most important part of an effective NEMESIS installation where live termites are already present in structures at a site, because baiting can take place immediately with above-ground Stations. This decreases the time between initial system installation and subsequent colony elimination. Above-ground Stations allow you to be proactive with the client about termite problems that may have been ongoing in a structure at the time of system installation.

### **BAITING ACTIVE TERMITES WITH ABOVE-GROUND STATIONS:**

6.18 Be sure to advise your customer that the use of Above-ground Stations, and any of the interception methods explained here, could result in defacing of the structural element to which the Station is attached, especially walls and floors, and that timber damage has already occurred.

6.19 Securely fasten the Above-ground Station to the structural member with screws or similar (6<sup>mm</sup> self tapping screws are recommended. Please note that the screws supplied with the stations are intended for securing the lid only). Install the Station with the bottom or side(s) of the Station as flush as possible against the chosen structural element.

6.20 Apply sealant around the sides of the Station where it joins the structural member to form a tight seal. Selley's 'No More Gaps'™ is the only sealant recommended for use here (termites may be repelled by other sealing compounds/adhesives). Leave it to cure



for at least fifteen minutes before adding the NEMESIS TERMITE BAIT.



Placing prepared NEMESIS bait bag in AG Station.

6.21 In most cases where the bait is installed in the AG Station in the bag, inspection ports are not necessary as the bag affords the termites protection. If external access inspection ports are required, drill a 25<sup>mm</sup> hole into the lid of the Station using a holesaw at the circular drill-out points on the station lid. Plugs are provided to seal off the access hole on completion.

#### **PROCEDURE WHERE THE TIMBER BASE IS RELATIVELY SOLID**

6.22 Drill 25<sup>mm</sup> holes using a paddle or spade bit to form termite entry holes through the Station. Drill holes into the timber workings (8 to 12<sup>mm</sup> diameter) in the damaged timber member where termites are active. Add the prepared NEMESIS TERMITE BAIT, making sure some trickles into the termite workings. A syringe filled with a very liquid NEMESIS mix is useful for applying the bait into the workings. This technique will increase the probability of the termites feeding in the Stations.



Applying NEMESIS bait by spoon directly to the termite workings.

#### **PROCEDURE WHERE THE TIMBER BASE IS SEVERELY DAMAGED**

6.23 Where the Above-ground Station is being placed onto severely damaged timbers, a Stanley knife can be used to cut a larger access hole between the station and the timber. This tends to encourage the termites to come out of their workings and seal the gap, which in turn brings them into contact with the NEMESIS TERMITE BAIT and commence feeding.

#### **LOCATING TERMITES**

6.24 Termites normally transport moisture to a point of infestation to maintain the balance they need for survival. If there is no direct external evidence of the location of termites behind the surface structural element, areas of maximum moisture are normally the best points for Station installation.

6.25 Use a moisture meter with a sensing pad instead of pins, *e.g.* Tramex™ to enable wide-ranging moisture readings to be taken without damaging surfaces.

6.26 A Termatrac™ unit is strongly recommended for determining areas of termite feeding activity for accurate bait placement, although their effectiveness may be reduced in areas of high moisture. They are very useful when it is difficult to find activity visually. It is only necessary to locate a very small number of termites to begin baiting with NEMESIS TERMITE BAIT.

6.27 Thermal imaging devices are also very useful for covering broad areas while locating termite activity. Special training in thermography is beneficial for the use of this technology.

#### **MOISTURE & ABOVE GROUND BAITING**

6.28 Moisture is a critical element in the process of establishing termite feeding in the AG Station. A reliable source of moisture gives termites a reason to prefer to feed on the NEMESIS TERMITE BAIT instead of the structure. Spray the area where the Station is installed with water to make it attractive to foraging termites. Keep any NEMESIS TERMITE BAIT in an Above-ground Station moist at all times. It may be useful to provide a drip hydration system in highly evaporative areas such as roof voids.



Applying moisture to an AG Station to encourage termite feeding.

### **ABOVE-GROUND BAIT STATION INSPECTION SCHEDULING**

6.29 Above-ground Stations must be inspected approximately every 3 to 6 weeks.

If termites are active, replenish the bait.

If termites are not active, reopen the access channels into the termite workings and freshen up the bait with water.

If all the bait has been consumed, install new bait after opening the access channels.

### **REMOVAL &/OR REPOSITIONING ABOVE-GROUND BAIT STATIONS**

6.30 Whenever termites have not been present in an above ground Station for more than 6 weeks, remove it. If signs of termite activity are still noted, install a new or cleaned Above-ground Station in the vicinity of the continuing activity to assist in re-establishing termite feeding.

## 7. CLIENT RESPONSIBILITIES:

7.1 The following steps need to be undertaken by the client/ homeowner in conjunction with the NEMESIS TERMITE BAITING & MONITORING SYSTEM, namely:

1. Engage a professional pest manager to regularly inspect the property.
2. Removal of any loose timber, rubbish and dead trees and stumps around the property.
3. Attending to any faulty plumbing, water leaks or damp areas caused by poor drainage.
4. Eliminating or reducing any instances of direct timber to ground contact both in the building construction and around the property.
5. Ensuring that there is adequate subfloor ventilation to reduce the likelihood of excessive moisture in that area.
6. Removal of excess soil from external brick walls to expose weep holes and to expose the edge of concrete slabs.
7. Replacing untreated timber garden surrounds and retaining walls with termite resistant materials.

7.2 There is no clearly defined period of time after Station installation within which it can be expected that termite activity will occur in the monitoring Station. The following factors may increase the period of time required to achieve colony elimination:

1. The presence of termiticides in the soil from previous treatments, which can deter or repel termites.
2. The size of the termite colony.
3. The species of termite and time of year- moulting does not occur in colder weather with e.g. *Schedorhinotermes*.
4. The distance between the structure and the termite nest.
5. The availability of alternative food sources either on or off the property.
6. Possible disturbance of the termite workings and/ or activity.

## 8. CONSTRAINTS:

### **WHERE CHEMICAL TREATMENTS HAVE BEEN USED PREVIOUSLY**

8.1 You may find it to be more difficult to eliminate a colony at properties where regular termite treatments have been carried out over several years, with arsenic dust or other products having been applied repeatedly. The NEMESIS TERMITE MONITORING & BAITING SYSTEM is ideal for use in these situations, and is probably one of the few options that will be successful.

8.2 Termites can be very sensitive to the presence of any chemicals and consequently it may be more difficult to induce feeding on the NEMESIS TERMITE BAIT when you place Above-ground Stations. Explain to your client how it is obvious that traditional treatment methods have not been effective at their property and that the NEMESIS TERMITE MONITORING & BAITING SYSTEM offers a reliable solution for eliminating the colony. Advise them that due to the nature of the infestation at their property, it will probably take longer than usual to induce feeding and eliminate the colony- they need to be patient. Confirm your confidence in the NEMESIS TERMITE MONITORING & BAITING SYSTEM and request their co-operation and assistance from the start. Explain that the termites may not start feeding immediately and you may have to modify the station placements.

8.3 With Above-ground Stations, if feeding doesn't commence in the first three weeks, try remoistening the bait and re-opening the access holes into the workings. Look at trying different moisture ratios in the bait. Consider establishing extra Stations. Try to introduce the bait directly into the workings and make the workings around the bait moist. If the termites keep blocking the access holes from their workings into the Station, simply keep re-opening them- you will eventually get feeding to occur.

### **PERIODS OF REDUCED ACTIVITY**

8.4 Low temperatures can substantially reduce or stop termite activity. If the temperature falls low enough, termites may cease to feed in Stations, or feeding in Stations may be delayed until warmer weather returns.

8.5 The temperature at which termite activity is substantially curtailed varies significantly between different geographic areas and with different species of termites. However, generally speaking, activity will be reduced in the Stations at those times of the year during which the average daily mean exterior air temperature is below 10° Celsius.

8.6 Some termite species e.g. *Schedorhinotermes* do not moult in winter and control will not occur until the weather warms. Other species may moult, but at a dramatically reduced rate during the cooler months. It is important to keep the colony feeding through this cooler period.

### **ADJUSTMENTS IF TERMITES ARE NOT FEEDING IN ABOVE GROUND STATIONS**

8.7 Termites are cryptic in nature- it may prove to be challenging to establish termite feeding in an Above-ground Station. If you have no initial success within three weeks of installation, modifications to the Above-ground installation may assist in successfully establishing feeding.

8.8 Make sure that the bait Station contains moisture. Re-apply moisture by spraying to the point where the NEMESIS TERMITE BAIT becomes almost liquid in texture. (Note that feeding may not occur in winter if the bait is too moist. In this case, replenish the Station using a rather drier mixture of bait).

8.9 If termites are mudding up the entry holes into the station, re-open the holes and consider creating additional access holes. Re-open them using a drill, sharp probe or Stanley knife. Place a new hole just above the surface of the NEMESIS TERMITE BAIT. (Make sure you do not touch the bait to ensure you leave no odour on it). Scrape termite mud into the Station and over the surface of the bait. Then drill a small hole in the lid of the Station to let cooler outside air in. This will encourage the termites to enter the Station and move over the bait as they start sealing up the hole created in the lid; they should start to feed on the bait once they are in the Station.

# 9. ACCREDITATION REQUIREMENTS:

## 9.1 To OBTAIN accreditation:

All applicants should have satisfactory knowledge or qualifications in termite management. Professional pest managers who have already been assessed for units 6, 8 and 10 of the National Pest Management Industry Competency Standards and who have experience in termite baiting and monitoring systems only need to attend a short seminar detailing use of the NEMESIS BAITING SYSTEM.

Applicants who have not had experience in termite baiting and monitoring systems will have to complete a more comprehensive training course.

An application form will need to be completed to initiate the process.

## 9.2 To MAINTAIN accreditation, you must:

- Carry out all termite monitoring and baiting according to the NEMESIS TERMITE BAITING and MONITORING SYSTEM manual (plus updates).
- Be licensed as required by legislative requirements in the State or Territory in which you are operating.
- Only use accredited subcontractors / employees to carry out work using the Nemesis system.
- Keep informed about product updates and development.

## 9.3 PRODUCT SUPPORT:

**PCT International Pty Ltd** WILL NOT give any field support whatsoever to companies, firms and subcontractors who are not carrying adequate amounts of public liability and professional indemnity cover, or who do not act in accordance with this Nemesis Procedures Manual (and subsequent updates).

To ensure continued full product support from PCT International Pty Ltd, please note the following requirements:

- Use accredited technicians to perform the work.
- Any laborers, trainees or subcontractors engaged to assist you in using the Nemesis System and/or components must be supervised by an accredited person on site.
- PCT reserves the right to withdraw product support for non-compliance with any of the directions contained within this manual.

PCT will maintain a separate website dedicated to the NEMESIS TERMITE BAITING and MONITORING SYSTEM. It will provide in-depth information about the product and the system, along with downloadable copies of forms, paperwork and advertising literature for the use of Companies doing installation work.

PCT International Pty Ltd does not have any requirement to run reporting systems to this Company. There are no licensing fees, and the bait and associated components become the property of the purchaser.

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## 10. SYSTEM PHOTOS



Placing the Inground Station in a prepared hole in soil.



Inground Station with timber inserts, cap and removal tool.



Inground Station with timber inserts correctly oriented.



Inground Station installation directly under pavers.

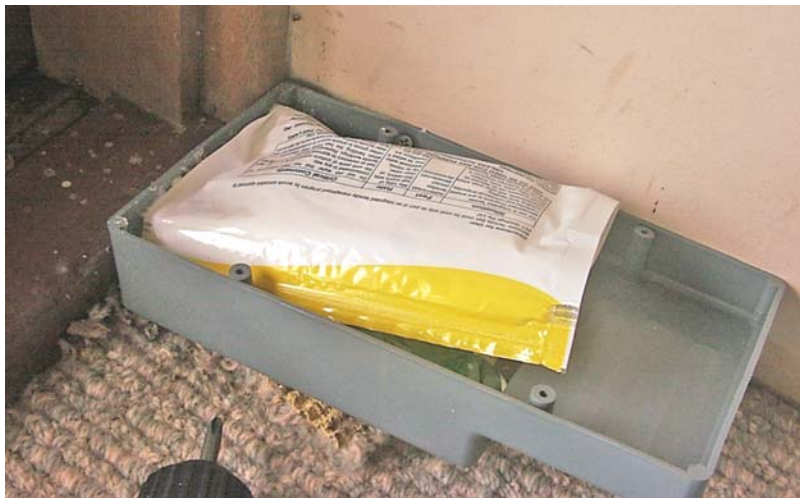




Prepared Nemesis bait placed in IG Station.



Prepared Nemesis Bait being applied directly underneath pavers.



Nemesis bait sachet folded, cut and placed in AG station.



Termites actively consuming Nemesis bait.





Termites actively consuming Nemesis bait.



Nemesis bait after being consumed by termites.



Nemesis Bait placed in the IG Station.



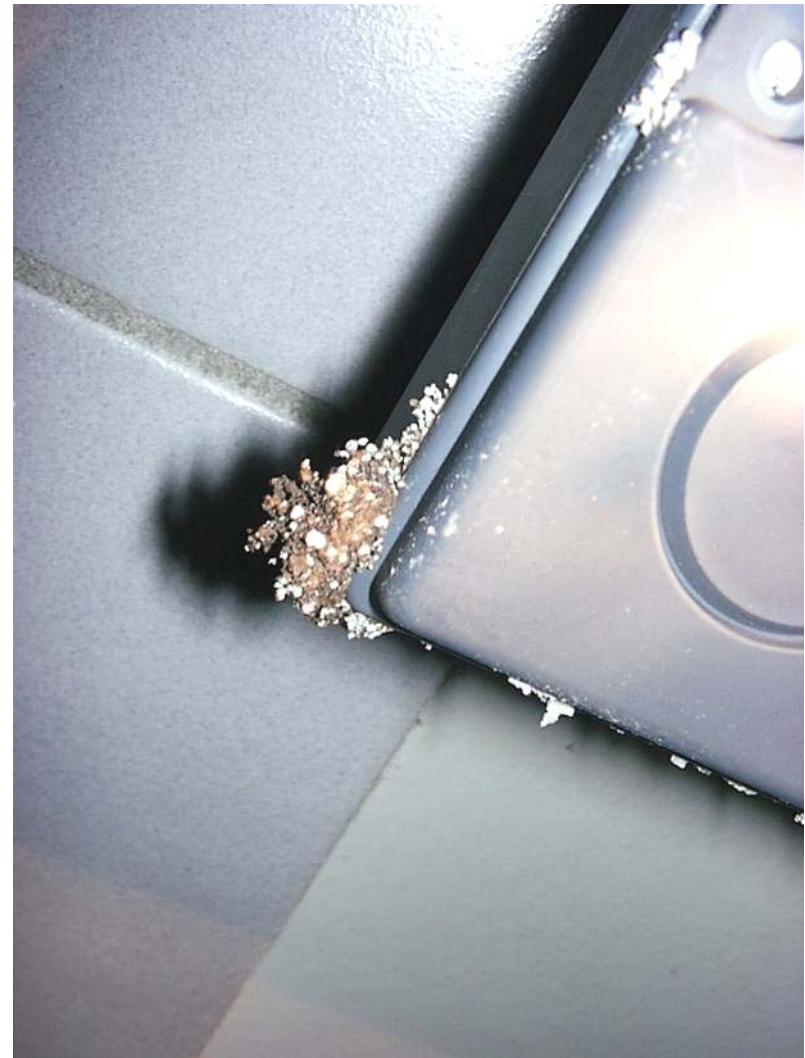
Above-ground Station being installed over termite damaged timber.



Affixing an AG Station to a wall above a door frame.



Termite workings on Nemesis bait in AG Station.



Termite workings at lid of an AG Station.





Termite workings encasing an AG Station.



Placing an additional Above-ground Station above a previously baited one to avoid disturbance to feeding termites.

Notes: