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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

1,1'-DIPHENYLETHANE

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT

1,1'-DIPHENYLETHANE

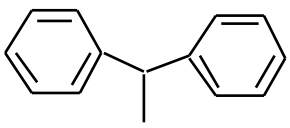
1. APPLICANT

Mitsubishi Australia Ltd., Level 36, 120 Collins Street, Melbourne, Victoria 3000.

2. IDENTITY OF THE CHEMICAL

Chemical name:	benzene-1,1'-ethylidenebis
Chemical Abstracts Service (CAS) Registry No.:	612-00-0
Other name:	1,1'-diphenylethane
Trade name:	Nisseki SAS-40 (this name refers to the commercial product imported into Australia which contains approximately 38% by weight of the notified chemical, 1,1'-diphenylethane.)
Molecular formula:	$C_{14}H_{14}$

Structural formula:



Molecular weight: 182.25

Method of detection and determination:

The notified chemical can be identified and quantified in soil using Gas Chromatography, Mass Spectroscopy or Infrared Spectroscopy.

Infrared spectroscopy major identification wavenumbers (cm^{-1}):

710; 740; 760; 1035; 1380; 1460; 1510; 1610; 1810; 1880; 1960; 2900; 2950; 3000; 3050; 3080.

3. PHYSICAL AND CHEMICAL PROPERTIES

The following data were obtained from tests with the notified chemical, 1,1'-diphenylethane.

Appearance at 20°C and 101.3 kPa:	clear low viscosity liquid
Odour:	aromatic
Melting Point:	-18°C
Boiling Point:	272.6°C at atmospheric pressure
Specific Gravity:	0.9998 at 20°C
Vapour Pressure:	267 Pa at 99°C; 667 Pa at 117°C
Water Solubility:	5040 µg/L at 25°C
Partition Co-efficient (n-octanol/water) log $P_{O/W}$:	estimated to be 3.98
Hydrolysis as a function of pH:	not expected to undergo hyrolysis

Adsorption/Desorption:	not provided but expected to adsorb strongly to soil
Dissociation Constant pKa:	dissociation in water is not expected based on the structure of the chemical
Flash Point:	135°C (open cup)
Flammability Limits:	lower limit of 1% by volume in air; non-combustible in liquid form
Autoignition Temperature:	475°C
Explosive Properties:	non-explosive
Reactivity/Stability:	stable under ambient conditions; incompatible with strong oxidants to produce carbon dioxide, carbon monoxide and water

Comments on physico-chemical data

The following comments have been provided by the notifier:

Hydrolysis is not expected based on the chemical structure of 1,1'-diphenylethane.

The octanol/water partition coefficient was calculated using the following equation (1); log Po/w = 4.5 - 0.75 x log (water solubility).

No specific adsorption/desorption data is available for 1,1'-diphenylethane and the log Po/w estimated above is indicative of a substance with a relatively high ability to adsorb to soil organic carbon and consequently a low mobility in soils. Also, this assessment is consistent with the relatively low water solubility of 1,1'-diphenylethane.

Dissociation is not expected based on the chemical structure of 1,1'-diphenylethane.

The above comments provide sufficient justification for the omission of the relevant data.

4. PURITY OF THE CHEMICAL

Degree of purity of the notified chemical alone: approx.99.9%

Impurities: not identified

Additive(s)/Adjuvant(s): none

5. INDUSTRIAL USE

The notified chemical will be imported as a 38% w/w component of the commercial product, Nisseki SAS-40, which is a condenser fluid used in high voltage power capacitors. The notifier estimates that 76 tonnes per year of the notified chemical itself will be imported. Nisseki SAS-40 will be imported in a "ready-to-use" form for filling into high voltage capacitors. These capacitors will only be deployed in industry and by power utilities.

6. OCCUPATIONAL EXPOSURE

The two main routes of exposure to the notified chemical will be through skin contact or inhalation.

Nisseki SAS-40 will be imported and transported in sealed 200 L drums. Storage of the fluid will be in 4000 L bulk containers which will be located in properly designed bulk storage areas. The fluid will be transferred from the drums to bulk containers via fixed installation pumps. Significant risks of exposure during transport and storage is unlikely except in the event of an accidental spillage or leak.

The filling of the capacitors will be done inside a vacuum chamber fitted with exhaust ventilation. The notifier states that the filling operation will be entirely automatic and workers will not be exposed to the notified chemical during this process.

The potential for worker exposure to the notified chemical during use of the high voltage capacitors is considered negligible as the capacitors will be hermetically sealed within a tank constructed of fully welded stainless steel. Normal operating temperatures will not exceed 15°C. The casing will be protected from rupture due to a fault possibly such as an overload, by the use of fuses and other methods. The capacitors will be isolated from main work areas.

However, direct contact with the notified chemical is possible through the handling of the drums by storepersons, the moving of filled capacitors which are not yet hermetically sealed by process workers, the handling of parts wet with fluid by office staff, and during equipment maintenance. Personal protection and a well ventilated workplace will help minimise exposure.

7. PUBLIC EXPOSURE

Members of the public are unlikely to be exposed to 1,1'-diphenylethane during the working life of the capacitors because the capacitors will be hermetically sealed in fully welded stainless steel tanks which will be installed at locations where public access is restricted. The low mobility of 1,1'-diphenylethane in soil suggests that there will be minimal public exposure through accidental leakage, spillage or waste treatment. Therefore, the potential for public exposure to 1,1'-diphenylethane is very low.

8. ENVIRONMENTAL EXPOSURE

. Release

The notifier has stated the primary mechanism for release of 1,1'-diphenylethane to the environment during the manufacture of capacitors containing Nisseki SAS-40 is to air through exhaust

stack emissions. Monitoring of exhaust stack emissions at the site of manufacture is not currently carried out. The notifier has stated that monitoring of the release of 1,1'-diphenylethane to air during capacitor manufacture is not required by the Environment Protection Authority of Victoria. The notifier has also stated that consideration of the extraction system at the factory indicates that levels of release of 1,1'-diphenylethane to the air would be minimal. Gases extracted from the production area pass through vacuum pumps where the majority of organic vapours are condensed and removed.

The use of Nisseki SAS-40 for capacitor manufacture will require the storage of significant volumes at the point of manufacture. It has been estimated that the volume required to be stored could be in the order of 12,000 litres. Storage would most likely be in the form of bulk containers, volume of 4,000 litres per container. Design of bulk storage areas and associated facilities should comply with all relevant State and Commonwealth regulations and codes of practice, thus minimising potential for accidental release to the environment through accidental spills. Transport of bulk material will be limited to transfer between the Port of Melbourne and the Lilydale factory. Nisseki SAS-40 will be transferred from 200 litre transport drums to bulk containers using fixed installation pumps. This is compatible with safe handling techniques that minimise the risk of accidental spillage.

The following annual quantities of waste will be generated during manufacture of high voltage capacitors:

- Approximately 35 litres fluid which may be spilled or condensed from vacuum pumps and which will contain 1,1'-diphenylethane, other components of Nisseki SAS-40 and lubricating oils; and

- Approximately 750 litres of Nisseki SAS-40 remaining in faulty capacitors which cannot be repaired.

Total liquid disposed of will be approximately 785 litres, with an approximate concentration of 1,1'-diphenylethane of 38% (equals ~298 litres).

Total Nisseki SAS-40 disposed of as contaminated product (ie adhered to capacitor cans that do not pass quality control testing) will be approximately 50 litres per year.

The notifier has stated that any waste Nisseki SAS-40 would be mixed with lubricating oils for disposal. All waste contaminated with Nisseki SAS-40 should be disposed of to a secure landfill or incineration facility, according to current State regulations.

The notified chemical may also be released to the environment due to the leakage of capacitors during use. Such releases of the notified chemical are likely to be widespread but diffuse. However, the notifier has stated that the capacitors are hermetically sealed within a tank constructed of stainless steel and are fully welded. Connections pass through porcelain insulators. Normal operating temperatures do not exceed 15^{O}C above ambient temperatures. High voltage capacitors will be protected with fuses or other methods to avoid the possibility of case rupture due to a fault occurring. Overall, leakage from capacitors will be extremely rare and stringent quality control standards will be maintained during manufacture.

As the notified chemical becomes contaminated rather than consumed during use in capacitors, it has to be assumed that large quantities of 1,1'-diphenylethane could potentially be released to the environment from the disposal of capacitors. The notifier has recommended that capacitor cans be punctured and drained of fluid at the end of their useful life. The fluid should then be disposed of in accordance with current State regulations. The remaining capacitor can will also be contaminated with small amounts of fluid and should be disposed of according to current State regulations.

. **Fate**

The notifier has stated that disposal of Nisseki SAS-40 containing 1,1'-diphenylethane would be carried out according to State requirements (ie to secure landfill), and there would be a low potential for environmental exposure to occur. Using regression equations (2), the Commonwealth Environment Protection Authority (CEPA) has estimated that the notified chemical is likely to bind strongly to soil (log Koc = 3.77) and is therefore unlikely to leach.

Should the notified chemical be released to water through accidental spillage etc, it would not be expected to sink due to its density being close to 1. The notified chemical is likely to volatilise from water as it is a chemical of medium volatility (3). However,

it would not be expected to persist in the atmosphere as it can react with hydroxyl radicals, for example.

. **Biodegradation**

The notifier has provided a ready biodegradability study (4) according to OECD Guideline No: 301C (5) for Nisseki SAS-40. After 28 days, approximately 50% of Nisseki SAS-40 had biodegraded. The testing period was extended and after 45 days, approximately 60% of Nisseki SAS-40 had biodegraded. These results would seem to place Nisseki SAS-40 in the OECD category of "readily biodegradable". However, it appears that further OECD criteria which states that the 'pass level' of biodegradation must be reached within 10 days of the start of biodegradation, was not met. A plateau appears to have been reached at about 60% degradation, and it therefore appears that this chemical may be resistant to any further breakdown.

. **Bioaccumulation**

The notifier has not provided testing for bioaccumulation of Nisseki SAS-40. However, the notifier has stated that given the relatively slow rate of biodegradation of Nisseki SAS-40, and the relatively low water solubility and moderately high octanol-water partition coefficient of the notified chemical, it is assessed as having some potential to bioaccumulate.

Accumulation may also be expected in soil/sediment systems, particularly in view of the potentially high adsorption.

9. EVALUATION OF TOXICOLOGICAL DATA

There are no toxicological data for the notified chemical, 1,1'-diphenylethane.

The following toxicity tests were carried out with the commercial product, Nisseki SAS-40, which contains 38% w/w of the notified chemical, 1,1'-diphenylethane; benzyltoluene; 1,2'-diphenylethane dibenzyl; diphenylmethane; and ditolylmethane.

9.1 Acute Toxicity

Table 1 Summary of the acute toxicity of Nisseki SAS-40

Test	Species	Outcome	Reference
Oral	rat	LD_{50}: 2531 mg/kg	6
Dermal	rat	LD_{50}: >2000 mg/kg	7
Skin irritant	rabbit	moderate irritant	8
Eye irritant	rabbit	slight irritant	9
Skin sensitisation	guinea pig	non-sensitising	10

9.1.1 Oral Toxicity (6)

This study was carried out in accordance with OECD Guideline No: 401 (11).

A range-finding study showed that at a dose level of 5000 mg/kg, 50% of animals died.

In the main study, a single dose of Nisseki SAS-40 at dose levels of 2324, 3000, 3873 and 5000 mg/kg was administered undiluted by gavage to groups of 10 Sprague-Dawley strain rats (five males and five females). The animals were observed for 14 days. During the study, deaths occured at all dose levels and were noted one to four days after dosing. Thirty percent of animals died in the lowest dose group and in the higher dose groups, the number of deaths noted was 70-90%. Deaths were noted in the higher dose groups on Day 1. All males and one female of the lowest dose group were normal throughout the study. Common signs of toxicity observed were hunched posture; pilo-erection; lethargy; and pallor of the extremeties. Less common signs of toxicity

observed were ataxia, red/brown stains around the mouth or snout and decreased respiratory rate. Diuresis was noted in two females of the highest dose. All the surviving animals appeared normal four days after dosing. Gain in bodyweight was unaffected in all but two females which showed reduced bodyweight gain in the second week of the study. Common findings at necropsy of those animals which died during the study showed abnormally red lungs; dark or pale livers, pale spleens and kidneys; and haemorrhage of the small and large intestines, and glandular and non-glandular gastric epithelia. Necropsy of the surviving animals showed pale livers in two females of the lowest dose group.

The results of this study indicate an acute oral LD_{50} of 2531 mg/kg for Nisseki SAS-40 in all rats.

9.1.2 Dermal Toxicity (7)

This study was carried out in accordance with OECD Guideline No: 402 (12).

A single dose of 2000 mg/kg of Nisseki SAS-40 was administered by occlusive application to the shaved backs and flanks of 10 (five males and five females) Sprague-Dawley strain rats for 24 hours. The animals were observed at 1 and 4 hours after dosing and thereafter once daily for 14 days. No deaths occured during the study. Gain in bodyweight was unaffected. No clinical signs of toxicity were observed. Necropsy revealed no treatment related organ toxicity.

The results of this study indicate an acute dermal LD_{50} of >2000 mg/kg for Nisseki SAS-40 in male and female rats.

9.1.3 Skin Irritation (8)

This study was carried out in accordance with OECD Guideline No: 404 (13).

A single undiluted dose of 0.5 ml Nisseki SAS-40 was administered by occlusive application to the shaved back and flank of three New Zealand White rabbits for four hours. The application site was examined at 1, 24, 48 and 72 hours after the removal of the

dressing. Effects were graded according to Draize (14). An additional observation was made on Day 7 to assess the reversibility of skin reactions. One hour after removal of the dressings, slight erythema and oedema were observed in all the animals tested. At 24, 48 and 72 hours, well-defined erythema which extended beyond the treatment site, and slight oedema were noted in these animals. By Day 7, both the erythema and oedema had disappeared but hyperkeratinisation was observed in all animals.

The results of this study show that the undiluted form of Nisseki SAS-40 is a moderate skin irritant in rabbits.

9.1.4 Eye Irritation (9)

This study was carried out in accordance with OECD Guideline No: 405 (15).

A single undiluted dose of 0.1 ml Nisseki SAS-40 was instilled into the right eye of each of three New Zealand White rabbits. The untreated left eye of each rabbit served as the control. The eyes were examined at 1, 24, 48 and 72 hours post-exposure. Effects were graded according to Draize (16). No corneal or iridial effects were observed. Slight conjunctival redness and chemosis were observed in all three treated eyes one hour post-exposure. Slight to moderate discharge was also observed in two animals at one hour post-exposure. All the treated eyes were normal by 48 hours.

The results of this study show that the undiluted form of Nisseki SAS-40 is a slight eye irritant in rabbits.

9.1.5 Skin Sensitisation (10)

This study was carried out in accordance with OECD Guideline No: 406 (17).

The Buehler method (18) was used. Effects were graded according to a four-point scale described in (10).

The sensitivity of the strain of guinea pigs used in this study was tested with a known positive sensitiser, 2,4-

dinitrochlorobenzene (DNCB). Positive sensitisation responses were observed in the animals tested.

Preliminary study

Two previously untreated guinea pigs were each topically treated for six hours with 0.5 ml of Nisseki SAS-40 at concentrations of 25, 50, 75 and 100 % v/v in arachis oil BP. No effects were observed in both animals at 24 and 48 hours post-exposure. Therefore, the undiluted (100%) form of Nisseki SAS-40 was selected for use in the Induction process.

The concentration of Nisseki SAS-40 to be used at challenge was determined by treating each of two guinea pigs with 0.5 ml of a 100% and 75% v/v solution for six hours. The undiluted (100%) solution caused scattered mild redness in both animals 24 hours post-exposure. Thus, the 75% v/v solution was selected for the challenge study.

Main study

Thirty female albino Dunkin-Hartley guinea pigs (20 test and 10 controls) were used.

Induction and Challenge

Undiluted Nisseki SAS-40 (0.5 ml) was administered by occlusive application to the shaved left flank of each test animal for six hours. Approximately 24 hours post-exposure, the application site was examined and the skin response graded. This procedure was repeated on the same site on Day 7 and 14. The control animals were similarly treated but a blank was used instead. After the second induction process, scattered mild redness was observed in five test animals and desquamation was noted in one of these animals. Similar effects were also observed after the third induction process but the number of animals exhibiting desquamation had increased to five. No effects were seen in the controls.

On Day 28 of the study, the same animals (both test and controls) were challenged for six hours on the right flank with 0.5 ml of a 75% v/v solution of Nisseki SAS-40 in arachis oil BP. The application sites were examined approximately 24 and 48 hours

after the removal of the dressing. No effects were observed in all the animals challenged.

The results of this study show that Nisseki SAS-40 is non-sensitising in the albino guinea pig at the concentration tested.

9.2 Repeated Dose Toxicity (19)

This study was carried out in accordance with OECD Guideline No: 407 (20).

Nisseki SAS-40 at dose levels of 50, 250 and 1000 mg/kg/day in arachis oil BP was administered by gavage once daily to three groups of 10 Sprague-Dawley rats (five males and five females) for 28 consecutive days. A control group of five males and five females rats was dosed with the vehicle, arachis oil BP.

No deaths occurred during the study.

A slight reduction in bodyweight gain was detected in high dose animals of both sexes throughout the study. A reduction may also have been present in intermediate dose males although the changes in bodyweight were very slight. Low dose animals and intermediate dose females showed bodyweight gains comparable with those seen in the controls. Both high and intermediate dose males showed reductions in food consumption throughout the study. Food consumption in all the female groups was comparable with the controls. Both sexes of the intermediate and high dose groups showed increased water consumption with an appreciable increase noted for the high dose group. Water consumption by the low dose animals was comparable with the controls.

High dose animals showed clinically observable signs of toxicity throughout the study with increased salivation detected one hour after dosing on Day 1. By Day 2, salivation was detected immediately after dosing. Wet fur and red/brown staining of the external body surface were also noted. Other observable signs of toxicity included isolated incidents of lethargy, exopthalmos and red/brown staining of the eyes. The condition of the animals was seen to deteriorate during the study with hunched posture and pilo-erection becoming common place. Signs of toxicity were also apparent in the intermediate dose groups. No observable signs of toxicity were detected in the low dose groups. Increased

salivation and water consumption suggest that the normal fluid balance was altered.

Haemotology results were unremarkable.

When compared to the controls, statistically significant increases in aspartate aminotransferase and alanine aminotransferase, and a statistically significant decrease in glucose seen in high dose males suggest possible hepatic effects. In females of the high dose group an increase in alanine aminotransferase and a decrease in glucose which were not statistically significant were also noted. Also observed in high dose females was a statistically significant increase in urea which together with a slight decrease in creatinine suggest possible renal effects. In males of the high dose group, an increase in urea was also noted. There was also significant, dose-related depression of serum phosphate levels in intermediate and high dose females. Also observed was a significant increase in potassium in high dose females.

A statistically significant increase in relative kidney weight was seen in high dose males and females. Also observed were statistically significant increases in relative liver weights in high dose males and females and in intermediate dose females. Statistically significant increases in relative brain and spleen weights were also observed in high dose males.

Necropsy revealed distended bladder in three high dose females possibly associated with increased water consumption. No macroscopic abnormalities were seen in the remaining groups. Histopathology showed hepatocyte enlargement amongst males and females of the high dose group.

9.3 Genotoxicity

9.3.1 Salmonella typhimurium Reverse Mutation Assay (21)

This study was carried out in accordance with OECD Guideline No: 471 (22).

Salmonella typhimurium strains TA1535, TA1537, TA1538, TA98 and TA100 were treated with Nisseki SAS-40 by the Ames plate incorporation method (23) at five dose levels, in triplicate, both with and without the addition of rat liver homogenate

metabolising system. This experiment was completed in duplicate. The dose range used was 8-5000 µg/plate in the first experiment, and 312.5-5000 µg/plate in the second experiment. The solvent, dimethylsulphoxide, was used as the negative control and positive controls used were N-methyl-N'-nitro-N-nitrosoguanidine (MNNG), 9-aminoacridine, 4-nitro-o-phenylenediamine and 2-aminoanthracene. When compared to the solvent control, Nisseki SAS-40, at the concentrations tested did not produce any statistically significant dose-related increases in the number of revertant colonies for all the bacteria strains tested, with or without microsomal activation. The positive controls produced marked increases. A reduction in background lawn was observed at dose level of 1000 µg/plate and was noted in most strains at 1250 µg/plate and above, in the presence and absence of enzyme metabolism.

The results of this study suggest that Nisseki SAS-40 is non-mutagenic under the test conditions reported.

9.4 Overall Assessment of Toxicological Data

Nisseki SAS-40 has low acute oral toxicity (LD_{50} in rats: 2531 mg/kg) and low acute dermal toxicity (LD_{50} in rats: >2000 mg/kg). Animal tests show that it is a moderate skin irritant and a slight eye irritant but not a skin sensitiser. A short-term repeated dose study shows treatment-related effects at and above 250 mg/kg/day. Results from the *Salmonella typhimurium* reverse mutation assay suggest that Nisseki SAS-40 is not mutagenic.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

The notifier has provided toxicity data for Nisseki SAS-40 rather than for 1,1'-diphenylethane as no data is available for the pure substance. 1,1'-diphenylethane will be imported as a component of Nisseki SAS-40.

Table 2 Summary of ecotoxicity of Nisseki SAS-40

Test	Species	Result	Reference
Acute Toxicity	Zebra Fish	LC50 8.4 mg/L NOEL 5 mg/L	24
Acute Toxicity	Daphnia Magna	24 h EC50 0.35 mg/L 24 h NOEL 0.19 mg/L 48 h EC50 0.20 mg/L 48 h NOEL 0.066 mg/L	25

The fish and daphnia static tests were conducted according to OECD Guideline No: 203 (26) and 202 (27) respectively. The above results indicate that Nisseki SAS-40 is moderately toxic to zebra fish and highly toxic to daphnia.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The major hazard associated with the notified chemical is predicted to be through inappropriate disposal or accidental spillage to the water compartment. Given that Nisseki SAS-40 is relatively toxic to aquatic organisms and that there is the potential to bioaccumulate, significant hazard may be predicted for the aquatic environment. However, the notifier has indicated that disposal of waste containing the notified chemical will be carried out according to State regulations, and the transport of bulk material will be limited to transfer between the Port of Melbourne and the Lilydale factory. Therefore, the notified chemical is not expected to pose a significant hazard to the aquatic environment due to the low potential for release.

Hazard associated with the disposal of waste containing the notified chemical to landfill is likely to be low as the notified chemical is unlikely to leach due to its high soil adsorption potential.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

There is no information on the effect of the notified chemical or Nisseki SAS-40 on humans. The latter has only been in production or use in the country of manufacture for a short period of time. However, based on the results of animal studies using Nisseki SAS-40, the notified chemical may be a skin and eye irritant but this is not clearly indicated as Nisseki SAS-40 contains other chemical components. These irritant properties may exacerbate existing skin or eye conditions. There is a risk of inhalation of the notified chemical, especially at elevated temperatures. If inhaled, it may cause irritation of the upper respiratory tract. An inhalation study is not available for assessment. The notified chemical has a molecular weight of <1000 and has the potential to cross biological membranes to bring about systemic effects. It is not expected to be a skin sensitiser based on the results of an animal study using Nisseki SAS-40.

Its physico-chemical properties suggest that the notified chemical is not likely to pose any significant safety hazards to workers under normal use conditions.

Therefore, under normal use conditions, the notified chemical is unlikely to pose any significant acute health or safety hazard to workers and the public.

13. RECOMMENDATIONS

To minimise public, occupational and environmental exposure to 1,1'-diphenylethane, the following guidelines and precautions should be observed:

- the workplace should be well ventilated and local exhaust ventilation should be used;
- elevated temperatures should be avoided;
- if direct contact with the notified chemical is likely, suitable personal protective equipment which comply with Australian standards (AS) should be worn such as:
  - safety glasses (AS 1336, AS 1337) (28, 29);

- impervious gloves (AS 2161) (30); and

- protective overalls (AS 3765.1, AS 3765.2) (31, 32).

respirators (AS 1715, AS 1716) (33, 34) should be used in an emergency such as the cleaning up of large spills, and when ventilation is insufficient;

. good work practices should be implemented to avoid spillages;

. the notified chemical should be contained in secure drums and storage should be in properly designed bulk storage areas;

. good housekeeping and maintenance should be practised. Spillages should be cleaned up promptly with inert absorbents which should be disposed of in accordance with local or State regulations;

. wastes should be disposed of to a secure landfill or incineration facility, according to current State regulations;

. good personal hygiene should be observed; and

. a copy of the Material Safety Data Sheet should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The Material Safety Data Sheet (MSDS) for the commercial product, Nisseki SAS-40, (Attachment 1), which contains the notified chemical, 1,1'-diphenylethane, was provided in Worksafe Australia format (35). This MSDS was provided by Mitsubishi Australia Ltd. as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of Mitsubishi Australia Ltd.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act), secondary notification of 1,1'-diphenylethane shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. The Director of Chemicals Notification and Assessment should be advised if there are significant changes in public, occupational or environmental exposure.

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4. Nisseki SAS-40: Biotic Degradation, the Modified MITI Test. Data on file, Mitsubishi International GmbH, Germany, 1990.

5. *OECD Guidelines for Testing of Chemicals*, "Modified MITI Test (I)" No: 301C, 1981.

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