SECTION 1 - IDENTIFICATION OF CHEMICAL PRODUCT AND COMPANY

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Substance:	Principally trichloroethylene; presented as an aerosol.
Trade Name:	**Nutcracker Aerosol**
Product Use:	Aerosol penetrant, rust preventative, water displacer, lubricant.
Creation Date:	**March, 2008**
Revision Date:	**June, 2008**

Section 2 - Hazards Identification

Statement of Hazardous Nature
This product is classified as: Xn, Harmful. Xi, Irritating. N, Dangerous to the environment. Hazardous according to the criteria of ASCC.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R45, R68, R36/38, R52/53. May cause cancer. Possible risk or irreversible effects. Irritating to eyes and skin. Harmful to aquatic organisms, may cause long-term adverse effects to the aquatic environment.
Safety Phrases: S23, S45, S53, S61, S24/25. Do not breathe spray mists. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show this MSDS where possible). Avoid exposure - obtain special instructions before use. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Avoid contact with skin and eyes.
SUSDP Classification: S6
ADG Classification: Class 2.2: Non-flammable, non-toxic gases.
UN Number: 1950, AEROSOLS

Emergency Overview

Physical Description & colour: Clear, light amber coloured liquid.
Odour: Coconut odour.
Major Health Hazards: may cause cancer, irritating to eyes and skin.

Potential Health Effects

Intentional misuse by deliberately concentrating and inhaling contents of aerosol containers can be harmful or fatal.

Inhalation

Short term exposure: In confined or poorly ventilated areas, vapours can readily accumulate and can cause unconsciousness and death. Excessive exposure may cause irritation to upper respiratory tract. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats). May cause alcohol intolerance often manifested by temporary reddening of the skin called "degreaser's flush". Minimal anaesthetic or irritant effects may be seen around 200-400 ppm. Levels in the range of 1000-2000 ppm may rapidly cause dizziness or drunkenness. Progressively higher levels or longer exposure may cause unconsciousness and death and may be immediately hazardous to life.
Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short term exposure: Prolonged or repeated exposure may cause skin irritation. May cause drying or flaking of skin. May cause more severe response if confined to skin. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Trichloroethylene may be absorbed through skin and may cause numbness in the fingers immersed in the liquid.
Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short term exposure: If sprayed directly in the eye, this product will irritate. If spraying is prolonged, it may cause damage through frostbite.

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 is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

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

Carcinogen Status:

ASCC: Trichloroethylene is classified by ASCC as a Class 2 Carcinogen, likely to be carcinogenic to humans. See the ASCC website for further details. A web address has not been provided as addresses frequently change.

NTP: Trichloroethylene is classified by NTP as reasonably anticipated to be carcinogenic to humans. See the NTP website for further details. A web address has not been provided as addresses frequently change.

IARC: Trichloroethylene is classed 2a by IARC - probably carcinogenic to humans. See the IARC website for further details. A web address has not been provided as addresses frequently change.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m^3)	STEL (mg/m^3)
Trichloroethylene	79-01-6	70-75	54	216
Carbon dioxide	124-38-9	no data	9000	54000
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 ASCC 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 MSDS with you when you call.

Inhalation: No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

Skin Contact: Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: There is a moderate risk of an explosion from this product if commercial quantities are involved in a fire. Firefighters should take care and appropriate precautions. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Suitable extinguishing media are carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. There is a danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.

Flash point: Not flammable.

Upper Flammability Limit: 10.5%

Lower Flammability Limit: 8% (Trichloroethylene)
Autoignition temperature: No data.
Flammability Class: No data.

Section 6 - Accidental Release Measures

Accidental release: This product is sold in small packages, and the accidental release from one of these is not usually a cause for concern. For minor spills, clean up, rinsing to sewer and put empty container in garbage. Although no special protective clothing is normally necessary because of occasional minor contact with this product, it is good practice to wear impermeable gloves when handling chemical products. In the event of a major spill, prevent spillage from entering drains or water courses and call emergency services.

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 MSDS 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: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store in a cool, well ventilated area. Check containers and valves periodically for leaks. 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**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

ASCC Exposure limits	**TWA (mg/m^3)**	**STEL (mg/m^3)**
Trichloroethylene	54	216
Carbon dioxide	9000	54000

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 where there is ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.
Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.
Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.
Protective Material Types: We suggest that protective clothing be made from the following materials: neoprene.
Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary.
Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

Physical Description & colour: Clear, light amber coloured liquid.
Odour: Coconut odour.
Boiling Point: 88-93°C at 100kPa
Freezing/Melting Point: No specific data. Trichloroethylene melts -85°C
Volatiles: approx 95%
Vapour Pressure: Approx 10kPa at 25°C (Trichloroethylene)
Vapour Density: No data.
Specific Gravity: 1.425-1.450
Water Solubility: Negligible.
pH: No data.
Volatility: No data.
Odour Threshold: No data.
Evaporation Rate: No data.
Coeff Oil/water distribution: 2.53 (log P octanol/water)
Autoignition temp: 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: Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition to irritating and corrosive Hydrogen chloride from solvent vapour. High energy ultra violet light sources such as welding arcs can cause degradation generating chlorine, hydrogen chloride and possibly phosgene, and should be avoided. Avoid strong bases including caustic soda and caustic potash. Also avoid metallic aluminium and zinc powders.

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

Fire Decomposition: Involvement in fire or high temperatures forms hydrogen chloride and very small amounts of phosgene and chlorine. Solvent decomposition occurs when catalysed by metal chlorides which can be produced by reaction of HCl and metals in the system. In the presence of aluminium, the decomposition can proceed rapidly with production of large amounts of heat and HCl fumes.

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.

Trichloroethylene is a ASCC Class 3 Mutagen, possibly mutagenic to humans.

SKIN: The LD_{50} for skin absorption in rabbits is approximately 10,000 mg/kg.

SWALLOWED: The oral LD_{50} for rats is 4,920 mg/kg.

INHALATION: The LC_{50} for rats is 12,500 ppm for 4 hours.

he substance may have effects on the central nervous system, resulting in loss of memory. The substance may have effects on the liver and kidneys

A risk assessment of trichloroethylene conducted under the Australian National Industrial Chemicals Notification and Assessment Scheme concluded (March 2000) that there was sufficient evidence from animal toxicity and limited epidemiological studies to classify trichloroethylene as a Carcinogen, Category 2 (a substance to be regarded as if it is carcinogenic to humans).

TERATOLOGY (BIRTH DEFECTS):

Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the foetus. Did not cause birth defects in animals; other effects were seen in the foetus only at doses which caused toxic effects to the mother.

REPRODUCTIVE EFFECTS:

Animal data on butylene oxide and trichloroethylene do not suggest any reproductive hazard from exposure.

Chronic effects may include symptoms of fatigue, headache, irritability, vomiting, flushing of the skin, intolerance to alcohol, and damage to liver kidneys, heart and nervous system.

MUTAGENICITY (Effects on genetic material): For the minor component - butylene oxide – in vitro mutagenicity studies were positive. Animal mutagenicity studies were negative.

For epoxide-free trichloroethylene, in vitro mutagenicity studies were negative. Animal mutagenicity studies were predominantly negative. Pure trichloroethylene (without additives) lacks mutagenic potential in most tests. A risk assessment of trichloroethylene conducted under the Australian National Industrial Chemicals Notification and Assessment Scheme concluded (March 2000) that positive results in somatic cells in vivo, and positive results in a number of in vitro studies, were sufficient to recommend a hazardous substance classification of Mutagen - Category 3 (a substance of concern to humans but in respect of which available information does not satisfactorily demonstrate inheritable genetic damage).

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Trichloroethylene	Conc>=20%: T; R45; R68; R36/38

Section 12 - Ecological Information

Harmful to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

There is little information on the toxicity of trichloroethylene for fish. The US Registry of Toxic Effects of Chemical Substances (1975) reports, for an unidentified species, that exposure to a concentration range of 100 - 1000 mg/litre produced toxic effects in 96 h. Toxicity tests carried out on salt-water flatfish, *Limanda limanda* (sole), 15 - 20 cm long, in a continuous water flow, established a 96-h LC_{50} of 16 mg/litre (1975). A 96-h LC_{50} of approximately 40 mg/litre (static) or 67 mg/litre (continuous flow) has been reported for the minnow *Pimephales promelas*.

A value was established at LC_{100} of 600 mg/litre for *Daphnia magna.* The LC_{50} for the balanide salt-water crustacean nauplius (larva) *(Elminius modestus)* was 20 mg/litre after 46 h, and the LC_{50} for the protozoon *Entosiphon sulcatum* was established as 1200 mg/litre.

Various LC_{50} values have been established for algae including 63 mg/litre for *Microcystis aeruginosa,* a concentration of 1000 mg/litre did not have any observable effect on *Scenedesmus quadricauda*. A short-term photosynthesis efficiency test gave an LC_{50} of 8 mg/litre and, finally, in tests carried out on *Thalassiosira pseudonana* and *Dunaliella tertiolecta,* there were observable effects at 50 and 100 µg/litre, in a mixed culture.

Section 13 - Disposal Considerations

Disposal: This product may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to separate the contamination in some way. Only if neither of these options is suitable, consider landfill.

Section 14 - Transport Information

ADG Code: 1950, AEROSOLS
Hazchem Code: 2YE
Special Provisions: 63, 190, 277
Limited quantities: ADG 7 specifies a Limited Quantity value of 1000mL for this class of product.
Dangerous Goods Class: Class 2.2: Non-flammable, non-toxic gases.
Packaging Group: Not set
Packaging Method: P003

Class 2.2 Non-Flammable, Non-Toxic gases shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 4.2 (Spontaneously Combustible Substances), and 5.2 (Organic Peroxides). They may however be loaded in the same vehicle or packed in the same freight container with Classes 2.1 (Flammable Gases), 2.3 (Toxic Gases), 3 (Flammable Liquids), 4.1 (Flammable Solids), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents), 6 (Toxic Substances), 7 (Radioactive Substances), 8 (Corrosive Substances) 9 (Miscellaneous Dangerous Goods), Foodstuffs and foodstuff empties.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredient: Trichloroethylene, is mentioned in the SUSDP.

Section 16 - Other Information

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

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS	Australian Inventory of Chemical Substances
ASCC	Office of the Australian Safety and Compensation Council
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

Please read all labels carefully before using product.

This MSDS is prepared in accord with the ASCC document “National Code of Practice for the Preparation of Material Safety Data Sheets” 2nd Edition [NOHSC:2011(2003)]

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