



## Section 1 - Identification of The Material and Supplier

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**Chemical nature:** Triclopyr is an aryloxyalkanoic acid derivative; Picloram is a pyridinecarboxy acid derivative.

**Trade Name:** **Fightback Herbicide**

**Product Use:** Agricultural herbicide for use as described on the product label.

**Creation Date:** **August, 2004**

**This version issued:** **August, 2012** and is valid for 5 years from this date.

## Section 2 - Hazards Identification

### Statement of Hazardous Nature

This product is classified as: Hazardous according to the criteria of SWA Australia.

Not subject to the ADG Code when transported in Australia by Road or Rail (refer to SP AU01). However if transported by Air or Sea, this provision does not apply. Then the product is classed as Dangerous (Class 9 Environmentally Hazardous) by IATA and IMDG respectively. See details below and in Section 14 of this MSDS.

**Risk Phrases:** R51. Toxic to aquatic organisms.

**Safety Phrases:** S20, S60, S24/25. When using, do not eat or drink. This material and its container must be disposed of as hazardous waste. Avoid contact with skin and eyes.

**SUSMP Classification:** S6

**ADG Classification:** Class 9: Miscellaneous dangerous goods.

**UN Number:** 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

### Emergency Overview

**Physical Description & colour:** Clear brown liquid.

**Odour:** Characteristic odour.

**Major Health Hazards:** The oral LD<sub>50</sub> of Triclopyr in rats ranges from 630 to 729 mg/kg, and is over 2000 mg/kg for various amine and ester formulated products. The dermal LD<sub>50</sub> for the technical material in rabbits is greater than 2000 mg/kg, and greater than 4000 mg/kg for the formulations. Inhalation of Triclopyr did not affect rats, but inhalation of some of the formulations did cause nasal irritation. Picloram has a lower toxicity than Triclopyr.

### Potential Health Effects

See section 11 for Chronic exposure studies.

#### 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.

#### Skin Contact:

**Short term exposure:** Available data indicates that this product is not harmful. It should present no hazards in normal use. However product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

#### Eye Contact:

**Short term exposure:** This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. Lengthy exposure or delayed treatment may cause permanent damage.

#### Ingestion:

**Short term exposure:** Available data shows that this product is harmful, but symptoms are not available. This product is unlikely to cause any irritation problems in the short or long term.

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**Carcinogen Status:**

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

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

**IARC:** Picloram is Class 3 - unclassifiable as to carcinogenicity to humans.

**Section 3 - Composition/Information on Ingredients**

Ingredients	CAS No	Conc, %	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
Triclopyr *	55335-06-3	300	not set	not set
Picloram **	1918-02-1	100	10	not set
Other non hazardous ingredients	secret	to 100	not set	not set

\* This ingredient is present as the butoxy ester (CAS 64700-56-7) at 428g/L, sufficient to give 300g/L Triclopyr.

\*\* This ingredient is present as the hexyloxypropylamine salt at 192g/L, sufficient to give 100g/L Picloram.

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

The 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 should not be exceeded for more than 15 minutes and should not be repeated for 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:** First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

**Skin Contact:** Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). Completely decontaminate clothing, shoes and leather goods before reuse or discard. If irritation persists, repeat flushing and obtain medical advice.

**Eye Contact:** Quickly and gently blot or brush away product. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until a few minutes after irritation has ceased, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical advice if irritation becomes painful or lasts more than a few minutes.

**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:** This product is classified as a C1 combustible product. There is a slight risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. 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:** 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 little 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:** 82°C (Pensky Martin closed cup)

**Upper Flammability Limit:** No data.

**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** C1

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## Section 6 - Accidental Release Measures

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including face mask, face shield and gauntlets. All skin areas should be covered. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. 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 MSDS 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 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:** Note that this product is combustible and therefore, for Storage, meets the definition of Dangerous Goods in some states. If you store large quantities (tonnes) of such products, we suggest that you consult your state's Dangerous Goods laws in order to clarify your obligations regarding their storage.

Store packages of this product in a cool place. 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 "Materials to avoid" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. 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> )
Picloram	10	not set

The ADI for Triclopyr is set at 0.005mg/kg/day. The corresponding NOEL is set at 0.5mg/kg/day.

The ADI for Picloram is set at 0.07mg/kg/day. The corresponding NOEL is set at 7mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Sept 2011.

**Ventilation:** No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised.

**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: rubber, PVC.

**Respirator:** Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

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:

<b>Physical Description &amp; colour:</b>	Clear brown liquid.
<b>Odour:</b>	Characteristic odour.
<b>Boiling Point:</b>	No Specific Data. Expected To Begin Boiling About 220°C at 100kPa
<b>Freezing/Melting Point:</b>	No specific data. Liquid at normal temperatures.

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<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>	No data.
<b>Specific Gravity:</b>	Approx 1.12 at 20°C
<b>Water Solubility:</b>	Emulsifiable.
<b>pH:</b>	No data.
<b>Evaporation Rate:</b>	No data.
<b>Coeff Oil/water distribution:</b>	Triclopyr -0.45 at pH 7 (log P octanol/water)
<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:** None known. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

**Incompatibilities:** strong oxidising agents.

**Fire Decomposition:** Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Hydrogen chloride gas, other compounds of chlorine. Water. 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 is unlikely to undergo polymerisation processes.

## Section 11 - Toxicological Information

**Toxicity:** The oral LD<sub>50</sub> of Triclopyr in rats ranges from 630 to 729 mg/kg, and is over 2000 mg/kg for various amine and ester formulated products. The dermal LD<sub>50</sub> for the technical material in rabbits is greater than 2000 mg/kg, and greater than 4000 mg/kg for the formulations. Inhalation of Triclopyr did not affect rats, but inhalation of some of the formulations did cause nasal irritation. These data indicate Triclopyr is harmful.

**Chronic toxicity:** Rats fed diets containing between 3 and 30 mg/kg/day of Triclopyr experienced no ill effects. Male rats fed much higher doses (100 mg/kg/day) had decreased liver and body weight and increased kidney weight. Male mice also showed reduced liver weight but at 60 mg/kg/day. Monkeys fed smaller doses of Triclopyr (20 mg/kg/day) showed no adverse effects.

**Reproductive effects:** Triclopyr fed to rabbits on days 6 to 18 of gestation at doses of 25, 50, and 100 mg/kg/day produced no effects on maternal body weight, litter size, or foetal body weight. A three-generation study of rats at doses of 3, 10, and 30 mg/kg/day for an 8- to 10-week period prior to breeding of each generation showed no impact of Triclopyr on fertility rates. Triclopyr does not appear to cause reproductive toxicity.

**Teratogenic effects:** Pregnant rats given moderate to high doses of 50, 100, and 200 mg/kg/day on days 6 to 15 of gestation had offspring with mild foetotoxicity, but no birth defects. There were no teratogenic effects in rabbits treated on days 6 to 18 of gestation at dose rates of 10 and 25 mg/kg/day. These data suggest that Triclopyr is not teratogenic.

**Mutagenic effects:** Triclopyr is nonmutagenic in bacterial and cytogenetic assay systems. A mutagenicity study using rats was weakly positive, but a negative result was found in mice, the more sensitive species. Based on these data, Triclopyr is unlikely to be mutagenic.

**Carcinogenic effects:** Rats and mice fed oral doses of Triclopyr at 3 to 30 mg/kg/day for 2 years showed no carcinogenic response. Even though the mice did have a high incidence of lymph cancer, this incidence were apparently characteristic of the particular strain of mice and did not represent a dose-related effect. Based on these data, Triclopyr is unlikely to be carcinogenic.

**Organ toxicity:** Organs affected by exposure to Triclopyr include the kidneys and liver.

**Fate in humans and animals:** Data from animal studies indicate that Triclopyr is rapidly eliminated via the urine as the unchanged parent compound. At higher oral doses, some Triclopyr may be eliminated through the faeces as the absorption capacity of the intestine is exceeded. Reported half-lives for elimination of Triclopyr from mammals are 14 hours (dog) and <24 hours (monkeys). A human elimination half-life of approximately 5 hours has been suggested. Picloram is of lower toxicity than Triclopyr.

## Section 12 - Ecological Information

**Effects on birds:** Triclopyr is slightly to practically nontoxic to birds. The LD<sub>50</sub> of the parent compound in the mallard duck is 1698 mg/kg, while the formulated compounds are of lower toxicity. The LC<sub>50</sub> in bobwhite quail and Japanese quail fed Triclopyr for 8 days are 2935 ppm and 3278 ppm, respectively.

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**Effects on aquatic organisms:** Triclopyr and amine salt are practically nontoxic to fish. Triclopyr has a LC<sub>50</sub> (96-hour) of 117 mg/L in rainbow trout and 148 mg/L in bluegill sunfish. It is practically nontoxic to the aquatic invertebrate *Daphnia magna*, with a reported LC<sub>50</sub> for the amine salt of 1170 mg/L. The ester formulation has reported 96-hour LC<sub>50</sub> values of 0.74 mg/L and 0.87 mg/L in the rainbow trout and bluegill sunfish, respectively. The compound has little if any potential to accumulate in aquatic organisms. The bioconcentration factor for Triclopyr in whole bluegill sunfish is only 1.08.

**Effects on other organisms:** The compound is nontoxic to bees.

**Environmental Fate:**

**Breakdown in soil and groundwater:** In natural soil and in aquatic environments, the ester and amine salt formulations rapidly convert to the acid, which in turn is neutralised to a relatively nontoxic salt. It is effectively degraded by soil microorganisms and has a moderate persistence in soil environments. The half-life in soil ranges from 30 to 90 days, depending on soil type and environmental conditions, with an average of about 46 days. The half-life of one of the breakdown products (trichloropyridinol) in 15 soils ranged from 8 to 279 days, with 12 of the tested soils having half-lives of less than 90 days. Longer half-lives may occur in cold or arid conditions. Triclopyr is not strongly adsorbed to soil particles and has the potential to be mobile.

**Breakdown in water:** Triclopyr is not readily hydrolysed at pH 5 to 9. Hydrolysis of the ester and the amine salt occurs rapidly and results in formation of Triclopyr. Reported half-lives in water are 2.8 to 14.1 hours, depending on season and depth of water. The ester formulation half-life is from 12.5 to 83.4 hours. In water, the most important breakdown process is photolysis.

**Breakdown in vegetation:** Triclopyr is readily translocated throughout a plant after being taken up by either roots or the foliage. Cowberries contained residues of 2.4 ppm at 6 days, 0.7 to 1.1 ppm at 30 to 36 days, and 0.2 to 0.3 ppm at 92 to 98 days after application. The estimated half-life in above ground drying foliage as in a forest overstory is 2 to 3 months.

Picloram is rapidly photodegraded on soil and in clear, moving water.

## Section 13 - Disposal Considerations

**Disposal:** Instructions concerning the disposal of this product and its containers are given on the registered label. These should be carefully followed. 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

**Not subject to the ADG Code when transported by Road or Rail in Australia, in packages 500kg(L) or less; or IBCs, but classed as Dangerous by IATA and IMDG when carried by Air or Sea transport (see details below).**

**ADG Code:** 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

**Hazchem Code:** •3Z

**Special Provisions:** 179, 274, AU01

**Limited quantities:** ADG 7 specifies a Limited Quantity value of 5 L for this class of product.

**Dangerous Goods Class:** Class 9: Miscellaneous Dangerous Goods.

**Packaging Group:** III

**Packaging Method:** P001, IBC03, LP01

Class 9 Miscellaneous Dangerous Goods shall not be loaded in the same vehicle or packed in the same freight container with Dangerous Goods of Class 1 (Explosives).

## Section 15 - Regulatory Information

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

The following ingredients; Triclopyr, Picloram are mentioned in the SUSMP.

## Section 16 - Other Information

**This MSDS 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, 7th Edition
<b>AICS</b>	Australian Inventory of Chemical Substances

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Issued by: Adama Australia Pty Ltd

Phone: (02)9431 7800 (office hours)

Poisons Information Centre: 13 1126 from anywhere in Australia, (0800 764 766 in New Zealand)



<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Number</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
<b>SWA</b>	Safe Work Australia, formerly ASCC and NOHSC
<b>NOS</b>	Not otherwise specified
<b>NTP</b>	National Toxicology Program (USA)
<b>R-Phrase</b>	Risk Phrase
<b>SUSMP</b>	Standard for the Uniform Scheduling of Medicines & Poisons
<b>UN Number</b>	United Nations Number

Contact Points:

Call Adama on (02)9431 7800

Fax: (02)9431 7700 and ask for the technical manager.

Police and Fire Brigade:

Dial 000

Emergency contact:

1800 024 973 (24 hours)

**If ineffective:**

**Dial Poisons Information Centre  
(13 1126 from anywhere in Australia)**

The information contained in this Material Safety Data Sheet is provided in good faith and is believed to be correct at the date hereof. However, it is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose. Adama Australia Pty Ltd makes no representation as to the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability whatsoever, whether with respect to negligence or otherwise, for any loss or damage arising from or connection with the supply or use of the information in this Material Safety Data Sheet.

Please read all labels carefully before using product.

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

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