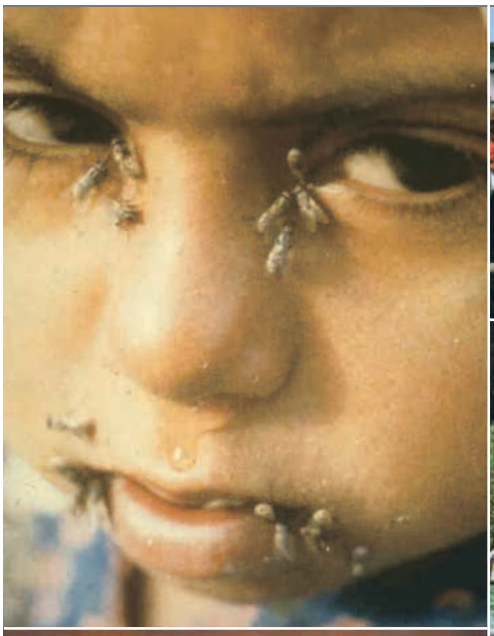
Innovative water-based insecticide for space spray

Aqua K-Othrine®

Space spray insecticide, water-based and water-dilutable, highly effective against disease vectors and nuisance insects.






Aqua K-Othrine® is a space spray concentrate containing 2% deltamethrin.
Deltamethrin is a highly active pyrethroid insecticide which will effectively flush insects out of their hiding places and kill through direct contact. Due to the high activity of deltamethrin Aqua K-Othrine® can be applied at extremely low dose rates of 0.5 - 1.0 g/ha of active ingredient to control public health insect pests including vectors of disease as well as nuisance flies and mosquitoes.

Aqua K-Othrine® utilises a unique patented anti-evaporant technology which makes it easy and convenient to use with reduced irritancy, odour and environmental impact.

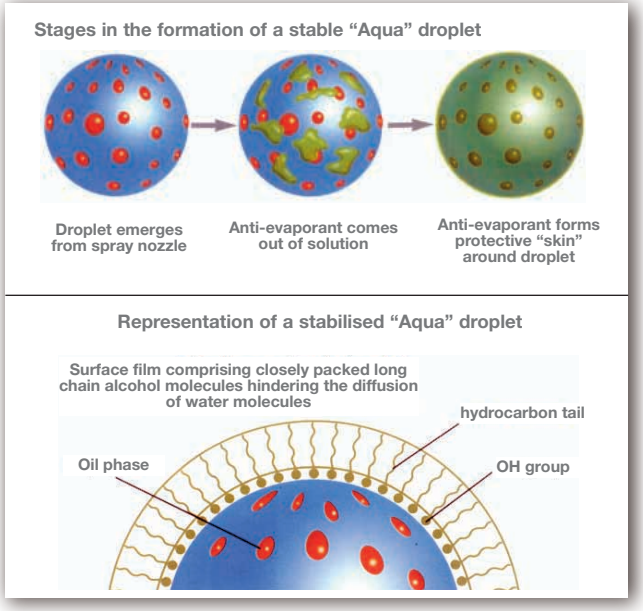
Bayer Environmental Science

Aqua K-Othrine®

Space spray insecticide, water-based and water-dilutable, highly effective against disease vectors and nuisance insects.

Patented Aqua technology

Aqua K-Othrine® formulation is based on water and this highlitghts the specific benefits of the formulation. The Film Forming Aqueous Spray Technology (FFAST) is a unique patented formulation system which allows the use of water as the diluent without the normal drawbacks of evaporation.
The principle behind FFAST is simple yet extremely



effective. As each droplet is formed, long chain alcohol molecules rapidly migrate to the surface where they align to form a protective skin. This gives a sealed package of water-based insecticide, thereby retarding evaporation and greatly extending the effective range of the spray.
The key result of this is that Aqua K-Othrine® provides long-lasting effective droplets in all climatic conditions and is as effective as oil/diesel diluted space spray concentrates when sprayed at equivalent active ingredient rates.

Aqua K-Othrine® is easy to use, a user friendly concentrate producing a space spray that minimises flammability, smell, staining, paintwork damage, toxicological risk and pollution.

Water – the natural diluent

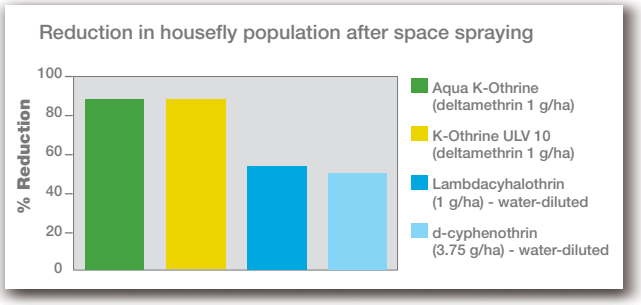
Water is the natural choice for the diluent of space sprays, particularly in the light of increased concern about the use of diesel. However, water-dilutable emulsifiable concentrate (EC) formulations may give poorer insecticidal performance in comparison with diesel or oil-diluted products. This is due to evaporation of water (which is more volatile than diesel) from the spray, leaving droplets which are too small for efficient impaction on the insect.

By using water as the main solvent, as well as the diluent, Aqua K-Othrine® can offer a number of specific benefits to the user. Aqua K-Othrine® is clean, easy to handle concentrate which is completely acceptable in use since it has virtually no odour.
The water-based formulation eliminates the risk of fire, as well as reducing paint spotting and staining.
Water is the natural choice for the diluent because it is readily available and offers genuine cost savings to the user compared with oil or diesel diluents.

Impact on the environment

Aqua K-Othrine® significantly reduces environmental pollution because the formulation is water-based and water-diluted. The active ingredient deltamethrin is rapidly degraded in the natural environment and the low dosage rates of 0.5 to 1.0 g/ha again contribute to a reduction in environmental contamination.

Bio-efficacy



Trial results in Turkey

Method of use

Aqua K-Othrine® is multi-functional in terms of application. Primarily, it has been designed for Ultra Low Volume (ULV) use but is also ideal for thermal fogging

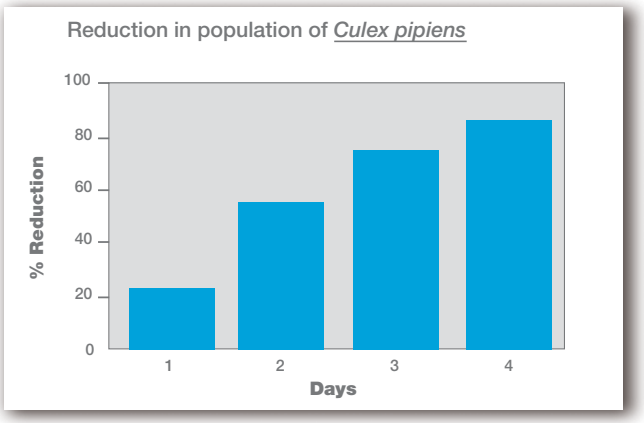
Aqua K-Othrine® can be used for large scale conventional outdoor spraying as well as for indoor use.

For outdoor ULV spraying Aqua K-Othrine® should be diluted with water and applied using any ULV machine capable of producing droplets with a volume median diameter (VMD) in the range of 15-25 microns.

The product may also be applied through hand held thermal foggers for control of mosquitoes.

In case of indoor treatments, remove all pets and foodstuffs from the room and cover all surfaces used

for food preparation. Turn off the electricity and extinguish all naked flames.



Application rates

Insects	Application technique	Dilution Rate	Application rate
Flies	ULV outdoors	1 + 9	500 ml/ha
	Thermal fogging indoors	1 + 99	100-200 ml per house or 1l / 2000 m^3
Mosquitoes	ULV outdoors	1 + 9	500 ml/ha
	Thermal fogging indoors	1 + 99	100-200 ml / house or 1l / 2000 m^3

Toxicity

Aqua K-Othrine®		
Oral (rat)	LD_{50} (mg/kg bw)	304 - 500
Dermal (rat)	LD_{50} (mg/kg bw)	> 5 000
Inhalation (rat)	LC_{50} (mg/l)	> 5.8
Skin irritation (rabbit)	Slight irritant effect	
Eye irritation (rabbit)	Slight irritant effect	
Skin sensitization (guinea pig)	Non sensitizing	

Environmental protection

• Prepare only the amount of product required for immediate usage. Do not store diluted material.
• Do not dispose of any excess diluted product and rinsings of dip containers into waterways, ponds, streams etc. Can be landfilled or incinerated in compliance with local regulations.

Soil

• Persistence and degradation
Deltamethrin is rapidly degraded in most soils with DT_{50} values of approximately 3 weeks.

• Mobility:
Deltamethrin is absorbed onto soil particles very rapidly and with high adsorption constants. The desorption is very low, therefore the risk of leaching of the parent compound into deep soil layers can be excluded.

Ecotoxicity of the active ingredient:

Trout (96h)	LC_{50} (µg/l)	= 0.91
Daphnia (48h)	EC_{50} (µg/l)	= 0,56
Quail	LD_{50} (mg/Kg)	> 2 250
Duck	LD_{50} (mg/Kg)	> 4 640
Earthworm (14d)	LC_{50} (mg/kg)	> 1290

Ecotoxicity Aqua K-Othrine:

Fish (96h) Rainbow trout	LC_{50} (mg/L)	0.324

Our deltamethrin has been evaluated by the World Health Organization and complies with the WHO/SIT/24.R2 specifications, providing the user with maximum security of product quality

Safety Advice

• Wear suitable protective clothing when handling the product (e.g. coveralls, eye protection (faceshield), and gloves and when applying the product (e.g. coveralls, gloves, goggles and spray mask).
• Avoid working in spray mist or wear a spray mask and suitable protective clothing.
• Wash hands and exposed parts before eating, drinking or smoking and after work.
• When spraying indoors exclude persons and animals during treatment, and ventilate treated areas thoroughly after treatment.
• Wash splashes from skin or eyes immediately with plenty of water.
• Mechanical sprayers can be noisy. The use of ear protection is recommended when spraying indoors or in other enclosed places.
• Do not spray the moving parts of any machinery, electric motors and switchgear.
• Do not apply light oil based sprays in the presence of naked flames, hot surfaces or unprotected electrical equipment.
• Remove heavily contaminated clothing immediately and wash before re-use.
• The user should obtain hazard information on the diluent (e.g. diesel oil) and take necessary precautions.
• Do not apply directly to surfaces on which food is stored, prepared or eaten.
• Protect food, food-preparing equipment and eating utensils from contamination during application.
• Toxic to fish and aquatic life. Do not contaminate ponds, waterways or ditches with chemical or used container.
• Keep out of reach of children.
• Keep only in original container, tightly closed, in a safe place.
• Wash out used container thoroughly and dispose of safely.

First Aid measures in case of exposure

Contact with skin:
Carefully remove contaminated clothes and shoes. Wash with soap and water. Apply Vitamin E cream or simple lotion. When symptoms persist or in all cases of doubt, seek medical advice immediately.

Contact with eyes:
Rinse immediately with plenty of water for at least 15 minutes.
In case of persistent inflammation, seek advice from an ophthalmologist.

In case of inhalation:
Remove to fresh air. Keep patient at rest. If symptoms persist, call a physician.

In case of ingestion:
Wash out mouth with water. Do not induce vomiting. Keep patient at rest. Seek medical advice immediately.

Local treatment:
Initial treatment should be symptomatic and supportive. After eye contact: instillation of local anaesthetic drops e.g. 1% Amethocaine Hydrochloride eye drops. Give analgesics as necessary.

Systemic treatment:

Endotracheal intubation should be done and gastric lavage performed, followed by administration of charcoal.
Monitoring of respiratory and cardiac functions ECG - monitoring (Electrocardiogram)
Check for pulmonary oedema in event of inhalation.
Keep airway clear, administer artificial respiration if necessary. Against convulsions: Give diazepam: for adults 5-10 mg intravenously as necessary until fully sedated ; for children 2.5 mg i.v.
There is no antidote.
Contraindication: atropine
Contraindication: derivatives of adrenaline
Recovery: Spontaneous.

Your Bayer Environmental Science local contact

Réalisation Imprim'Diffusion 501

Bayer Environmental Science

Bayer Environmental Science SAS
16, rue Jean Marie Leclair - CP 106
F-69266 Lyon - France
Tel : +33 (0)4 72 85 43 21
Fax : +33 (0)4 72 85 46 32

www.bayercropscience.com

A Business Group of
Bayer CropScience