

NEW HORIZONS AWAIT FOR YOU



## BIO DROG DIFFUSION

Géraniol  
Protective barrier

# GERANIOL

## The Biocide Active Substance of the future

Naturally occurring, Geraniol is a **very versatile** molecule that stands out as a promising substance in the field of Biocides.

Geraniol acts as a **repellent, insecticide and larvicide** for flying and crawling insects.



## Geraniol is already around us

Geraniol takes the form of a colourless liquid that is insoluble in water. It is an unsaturated terpene alcohol.

The Geraniol molecule has numerous applications and is already used in many everyday products:

- well-known perfumes (due to its olfactory properties; odour of roses),
- cosmetic creams (for its antioxidant and toning properties),
- food products as a flavouring agent,
- and tomorrow, in medicine, in new therapies using its ability to inhibit cancer cells and/or its anti-inflammatory effect.

Geraniol can be found in its pure state in most of the essential oils produced by plants. **Palmarosa oil**, a plant that grows in Asia, is very rich in Geraniol (more than 75%). It can also be found in **essential oils of Geranium, Lemon and Citronella**, among others. There is Geraniol in ginger, carrots and lily of the valley. Bees produce it naturally and use it as a marker to locate their hives!





## Geraniol, a healthy molecule for humans and the environment

Unlike many Biocide Substances, Geraniol **is not considered to be a neurotoxic agent**: it neutralizes insects by dehydrating them and thereby stopping them breathing. **Geraniol is not suspected of having neurotoxic side effects for humans.**

**Furthermore, it is not considered to be an endocrine disrupter.** In its unprocessed, concentrated state, Geraniol may be allergenic in the event of direct contact with the skin. **But there is no reason to ever use it in this way.**

It has been long established that **Geraniol is totally biodegradable: when it is returned to nature**, it breaks down into carbon, hydrogen and oxygen, and completely disappears with no risk of environmental pollution. Furthermore, **it is not classified as dangerous for aquatic environments.**

## France Fluides : a member of the Geraniol Biocide Task Force

Specialized in the field of textile treatments, France Fluides has chosen to focus research and development on Geraniol with a view to offering solutions that are efficient, safe and tailored to your requirements.

Convinced of Geraniol's potential, France Fluides brought together other European companies, creating the **Geraniol Biocide Task Force** in 2002, which works to develop a growing place for Geraniol on the pesticides market in Europe and the rest of the world.

### → Towards final approval from European authorities

Geraniol is undergoing an approval procedure that has nearly been completed: more than 95 % of the tests have been carried out. All that remains is a study of reproductive toxicity in accordance with the time periods set by the European scientific authorities.

Taking into account the time required to complete this study, **final approval for Geraniol is expected in 2019-2020.**

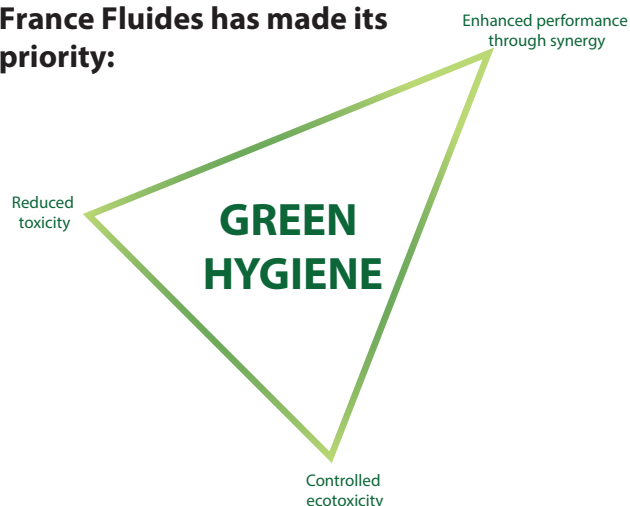
In the meantime, France Fluides benefits from a right to **freely market Geraniol and Geraniol-based products** on the European market for its insecticide and repellent effects.

In order to take its approach even further, France Fluides has decided to expand its range of Active Substances beyond Geraniol.

France Fluides's goals are, in all cases:

- to obtain insecticide or repellent performances in synergy with Active Substances of natural origin,
- the reduction and control of any toxicological risks to human health,
- and the control of any risk of environmental pollution.

**This is the Green Hygiene virtuous triangle which France Fluides has made its priority:**



# FRANCE FLUIDES

**France Fluides is now able to provide several forms of Geraniol to meet your requirements. Please do not hesitate to contact us.**

Geraniol being insoluble in water in its basic form, France Fluides has developed, after years of research, a complete range of water-soluble solutions: **protective barrier®**.

**protective barrier®** consists of a range of specialities with the following characteristics:

■ **Active Substances** = Geraniol in particular, but also Essential Oil of Peppermint. The latter has now been authorised in all classes and meets the same requirements as Geraniol in terms of Green Hygiene,

■ **Optimization** of the insecticide effect of these active substances to achieve unparalleled levels of performance with Geraniol thanks entirely to synergy effects,

- **Control** of the risk of skin sensitivity,
- **Ease** of use with water,
- Some solutions are also compatible with **US regulations**.

In the regulatory context, the objective of the **protective barrier®** range is to provide an innovative response to the following parasites:

INSECTICIDE ACTION	
on crawling insects	on flying insects
German cockroaches ( <i>Blattella germanica</i> )	Mosquitoes: the 4 main species are:
Black garden ants ( <i>Lasius niger</i> )	• <i>Aedes aegypti</i> (main vector of dengue, the Zika virus, chikungunya and yellow fever)
Castor bean ticks ( <i>Ixodes ricinus</i> )	• <i>Anophèle gambiae</i> (vector of malaria)
Cat fleas ( <i>Ctenocephalides felis</i> )	• <i>Culex pipiens</i> (not usually a vector of disease but troublesome in everyday life)
Head Lice ( <i>Pediculus humanus capitis</i> )	• <i>Aedes albopictus</i> (Tiger mosquito, main vector of chikungunya)
Dust mites ( <i>Dermatophagoïdes pteronyssinus</i> )	Houseflies ( <i>Musca domestica</i> )
Bed bugs ( <i>Cimex lectularius</i> )	Wasps ( <i>Vespula vulgaris</i> )
Red mites ( <i>Dermanyssus gallinae</i> )	Hornets ( <i>Vespa velutina</i> )
	Clothing moths ( <i>Tineola bisselliella</i> )
REPELLENT ACTION	
on crawling insects	on flying insects
Castor bean ticks ( <i>Ixodes ricinus</i> )	Mosquitoes ( <i>Aedes aegypti</i> , <i>Anophèle gambiae</i> , <i>Culex pipiens</i> , <i>Aedes albopictus</i> )
Bed bugs ( <i>Cimex lectularius</i> )	
Dogs and Cats (main species)	

The scope of action of the **protective barrier®** range being broad, France Fluides may study any opportunity that aims to broaden the spectrums of application. Please do not hesitate to contact us in this regard, depending on your requirements.

## The protective barrier ® range at your service

The **protective barrier®** range brings together specialities that are easy to dilute with water and whose insecticide or repellent actions have been significantly increased: this represents an opportunity for you to benefit from exclusive patented synergies. France Fluides's consultants will help you find the speciality that is most suited to your requirements.

Once final approval for Geraniol has been granted, France Fluides is already committed to completing the procedures to obtain the necessary marketing authorisations. You can therefore work in total security.

**If you choose to receive Geraniol now in one of the forms France Fluides can supply, you will be registered on the list of partners with priority access to protective barrier® opportunities. We would then be able to agree on an appropriate development partnership.**

### Examples of synergies:

Tests conducted at Techniques Environnement Consultants in June 2017

German cockroaches ( <i>Blattella germanica</i> )	Dose	Mortality	/ Speed of action	
Geraniol on its own	2%	100%	in	24 h
Synergised Geraniol by France Fluides method	2%	100%	in	5 mn

Bed bugs ( <i>Cimex lectularius</i> )	Dose	Mortality	/ Speed of action	
Geraniol on its own	2%	100%	in	24 h
Synergised Geraniol by France Fluides method	2%	100%	in	5 mn

Black garden ants ( <i>Lasius niger</i> )	Dose	Mortality	/ Speed of action	
Geraniol on its own	4%	100%	in	15 mn
Synergised Geraniol by France Fluides method	1%	100%	in	5 mn

Other tests are scheduled, especially with regard to repellent action.



# Contact us !

## Working with France Fluides

We can offer an equitable partnership to enable you to approach your Green Hygiene development projects in an ambitious, confident manner.

We will be delighted to provide any information you require or to meet you to discuss your requirements.

**Contactez-nous:**  
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