Puliti & Felici

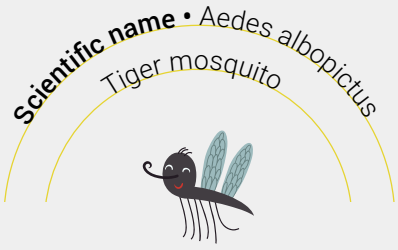
FEDERCHIMICA
ASSOCASA
Associazione nazionale detergenti e specialità per l'industria e per la casa

Mosquitoes

Mosquitoes are insects belonging to the Diptera order and are notorious for being a nuisance to humans.
The large number of species, each with its own particular biology, makes controlling them quite a challenge. The best approach is to concentrate on killing the larvae as:
- **larvae are concentrated in breeding grounds and are therefore easier to reach;**
- **mosquitoes are killed before they have a chance to bite;**
- **larvicides include numerous selective insecticides;**
- **killing the larvae is less expensive;**
- **it is often possible to use preventative solutions aimed at stopping the formation of breeding grounds.**

Not all mosquitoes are anthropophilic, meaning they bite humans; most of the species (known as zoophilic) feed on the blood of birds, amphibians and other animal vertebrates. In the anthropophilic species, only the females require a blood meal because they need the proteins to help their eggs develop.
Depending on the species, the eggs are laid either one by one on water or in clusters to create floating rafts, or on the ground or substrata immediately above the surface of the water.
Mosquitoes are important for human health because they can potentially transmit diseases such as malaria, chikungunya fever, dengue fever, Zika virus, West Nile virus etc.
While these diseases are rare in Italy and there is no real danger to our health, we should not underestimate the nuisance mosquitoes cause with their bites. In many cases, these insects can interfere with outdoor activities, making areas where tourists visit and people live in towns unbearable, especially if they are located near large larva breeding grounds where the mosquitoes belong to a balanced ecosystem and the humans are the infesters.

There are two main species of mosquito we can find in Italy:



The tiger mosquito is typically black in colour and has a white band running along the dorsal side of the thorax and white stripes on its legs. Its breeding grounds are mainly located in residential areas with vegetation, where water (often rainwater) collects in small amounts in different kinds of containers. The tiger mosquito does not lay eggs in puddles, ponds, rivers, channels (free water), swimming pools, large cisterns or flooded basements. However, any small areas where water collects can be colonised: containers, bottles, folds in plastic sheets, drains, small holes in rocks, saucers under plant pots and tyres.
Adults cannot fly very far, they do not move around much and cannot even reach the second floor of a house.

Eggs that are particularly resistant to the cold and dehydration can survive the winter. **This species is extremely anthropophilic and can bite throughout the day, even though it prefers dusk.**

Scientific name • Culex pipiens
Common house mosquito

The common house mosquito is a nocturnal pest that buzzes in your ear at night and does its best to keep you awake (or at least that's what it feels like). **Brown in colour, it mainly bites indoors where it is active all night long**.

They reproduce in a variety of places: sewer covers, cisterns, water purifiers, drains and any other space, even if it is temporary. Larvae cannot survive where there are fish, so they prefer places where water collects temporarily or where, due to the high organic content and lack of dissolved oxygen, there are not fish. Adults are able to fly a couple of hundred metres.
Normally adult common house mosquitoes spend the winter safe in basements, warehouses or under the stairs and this is why we can often find them in our homes even in winter.

How to protect ourselves

Let's see what we can use to protect ourselves from this bothersome insect.

Larval insecticides

These are insecticides designed to kill mosquito larvae. Larvicides for domestic use come in a variety of forms but the most popular and safest ones are undoubtedly dunks.
Whatever the brand you use, always read and follow the instructions on the product label as regards dosage and frequency of application.

Adulticide insecticides

Adulticide treatments consist of insecticides which kill the mosquitoes when they come into contact with them. This kind of disinfestation is effective against tiger mosquitoes which do not travel great distances and rest on vegetation but does not have a similar success rate with other species which move about a lot because its effect is minimal.
The only way to protect ourselves from this kind of mosquito is to use repellents.

Natural pyrethrum (pyrethrins)

Natural pyrethrum is actually a group of substances called natural pyrethrins which are found in chrysanthemum flowers. This insecticide is very fast-acting but its effects are short-lived. When sprayed in a garden, it quickly kills the mosquitoes there but the insects in the surrounding areas arrive just as quickly to colonise it again. Pyrethrins attack the nervous system of insects and since their nervous tissue to relatively similar to that of vertebrates (including humans), it can be toxic to us as well: so we need to take care and follow the instructions on the product label to the letter.

Pyrethroids

These are synthetic molecules whose chemical structure is similar to that of pyrethrins. There are different kinds of pyrethroids and their duration is inversely proportional to their speed of action and directly proportional to the irritating power. They are highly dangerous for fish but less so for terrestrial vertebrates and man.

Do-it-yourself disinfestation

Although insecticides for domestic use are widely available, it is always advisable to contact a pest control expert, as spraying substances which are harmful to mosquitoes can be dangerous if the right precautions are not taken.

If you feel confident you can manage on your own, always follow these rules:
- **respect the dilution rate on the product label:** increasing the concentration does not increase the efficacy, just the danger.
- **avoid spraying insecticide when it is windy**, as this increases the risk of contamination.
- **wear a mask with active carbon filters** (paper dust masks are not effective against chemical products) and **protective eyewear** to prevent the risk of irritation and conjunctivitis.
- **wear protective overalls** or at least a hat, gloves and long-sleeved top. Pyrethroids can sensitise and irritate the skin.
- **do not leave the diluted insecticide in the pump afterwards**, plastic blocks the insecticide molecules, making it less effective over time.
- **do not spray plants that you use for cooking**.
- **keep all pets locked in the house** while the product is being sprayed.
- **wait half an hour before accessing the treated area** to ensure the product has rested and will not cause breathing problems.
- **do not touch the treated plants before the insecticide is dry**.

If your house is surrounded by high, thick hedges, the disinfestation will be more effective and last longer as the treated vegetation acts like a barrier, preventing mosquitoes from neighbouring gardens from entering. The larger the treated area, the more effective the treatment as mosquitoes will have to fly a greater distance to infest the garden again; it is therefore a good idea to encourage your neighbours to disinfest their gardens too. When temperatures are high, and especially when they do not drop overnight, the duration of the insecticide is reduced considerably, so more frequent treatments are needed.

Candles, mosquito coils and plug-in killer devices etc.
Whereas in the past the only domestic devices we had to fight mosquitoes were coils and plug-in devices with tablets, today there is a huge range of products to choose from:

Light traps

This category includes devices designed to capture or kill mosquitoes as they are attracted by a light source which is usually blue. There are many different models, ranging from professional ones for bars and restaurants to those for use in children's bedrooms at home, electric traps which electrocute mosquitoes, sticky traps and traps which suck them up. Light, however, whether it is blue or another colour, does not attract mosquitoes a great deal, especially if there is a human being nearby (who is a lot more appetizing), so all sorts of insects apart from mosquitoes tend to end up in these traps.

Gas traps

Over the past few years there has been a boom in traps using propane gas (LPG) which guarantee 100% elimination of mosquitoes over large surfaces. They work by igniting the gas, producing water vapour, carbon dioxide and heat, three elements which attract mosquitoes. The poor insects are lured to the trap which, thanks to powerful fans, sucks them up with no chance of escape. As regards their efficacy, no accurate data is currently available. What we do know is that in certain circumstances this method allows you to capture large amounts of mosquitoes, helping lower the local population. There is no accurate, scientifically-based information as regards the tiger mosquito but it appears efficacy is lower with this species.

Ultrasound devices

These contraptions emit ultrasonic sound waves at a frequency which repels mosquitoes, keeping them away. In actual fact their efficacy is very limited.

Plug-in devices with liquid or tablets, candles, coils

These work by releasing a cloud of insecticide which kills the mosquitoes that are unable to escape (for example in a closed room) or has a repellent effect on others. These products are generally effective, especially in confined spaces like inside houses or between gazebos or huts protected by hedges, whereas they are considerably less effective in large open spaces and especially when fans are working. When they are used indoors, always follow the instructions to air the room before going into it as pyrethrins are generally used in these products and although they are not very toxic for vertebrates, they still present a low level of risk (do not keep them on during the night in your bedroom). Some products do not contain pyrethrins but substances which have no insecticide action as they act exclusively as repellents (geranium extracts, citronella etc.).
In this case results can vary according to the product and it is difficult to give a general opinion on them as there is such a wide choice of products on offer.

Sprays

Insecticide sprays have a very specific adulticide action. The insecticide is sprayed into the air, killing the mosquitoes flying around at that particular moment or before it falls to the ground. It can be sprayed onto walls or curtains near windows or between porticoes and gazebos to prevent mosquitoes entering the house, repelling them. Again, both their intensity and duration are vastly reduced in large open spaces.

Skin repellents

They keep mosquitoes away when sprayed onto the skin. Despite being very effective, they can be removed with heavy perspiration so must be reapplied when necessary. Generally speaking, they are not dangerous for our health, especially the latest formulas available, but a number of simple rules should always be followed, for instance: do not use on irritated or damaged skin and never spray directly onto the face but use your hands to apply it. Also choose the repellent's active ingredient according to the age of the user (shown on the packaging).