

PARKERS
PHARMA LIMITED

MOSQUITO

control guide



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Mosquitoes

of Public Health importance



- The female mosquito bites for a blood meal to produce eggs.
- The mosquito may transmit arboviruses that can cause illness to humans.

– **Culex sp.**

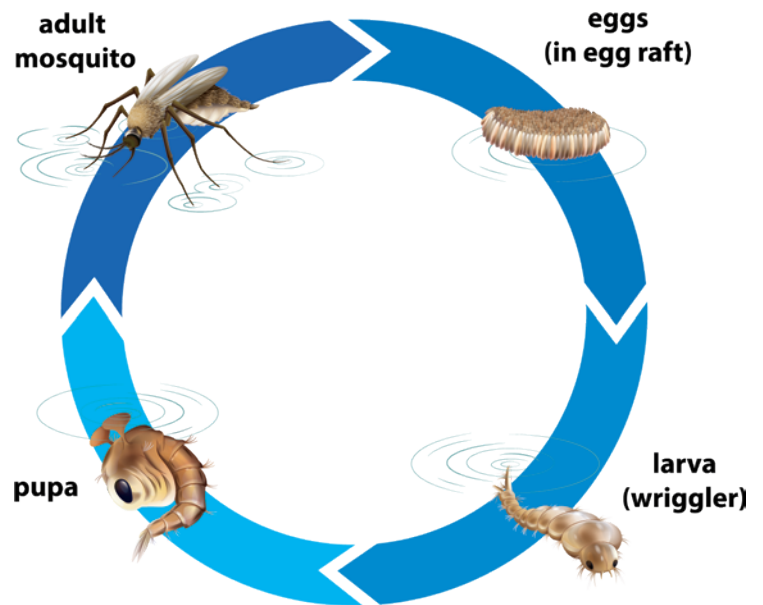
- West Nile Virus, Saint Louise Encephalitis

– **Aedes sp**

- Dengue, Chikungunya, Zika

Life Cycle

- The length of time for the entire life cycle to occur depends on species and temperature.
- In prime conditions this cycle can occur in as little as four days or as long as a month.
- For example the Aedes mosquito can complete the entire life cycle in about 8-10 days.

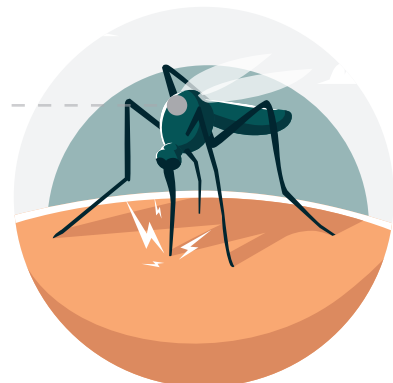


Culex quinquefasciatus

Common name *Southern house mosquito*

■ **Female**

- Dusk to dawn feeder
- Prefers an avian blood meal but will, also feed on other mammals
- Lays eggs in rafts in stagnant, organic rich water





Aedes sp.

Aedes aegypti
(Yellow fever mosquito)



Aedes ablopitus
(Asian tiger mosquito)



Female



Day feeder



Prefers a human blood meal but will also feed on other mammals



Lays single eggs on sides of water holding containers

Examples: flowerpots, spare tires

Integrated Mosquito Management (IMM)

- Site assessments
- Surveillance
- Public Education
- Application of control measures
- Evaluation of effectiveness





DEFEND YOURSELF!

- Clean rain gutters and downspouts.



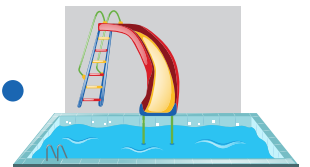
- Cover or discard old tires.



- Eliminate all standing stagnant water.



- Clean birdbaths and wading pools weekly.



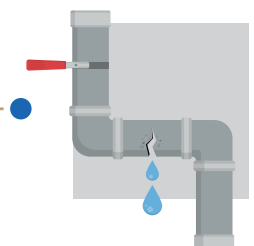
- Keep grass and vegetation trimmed.



- Store containers so they don't hold water.



- Repair leaky faucets.



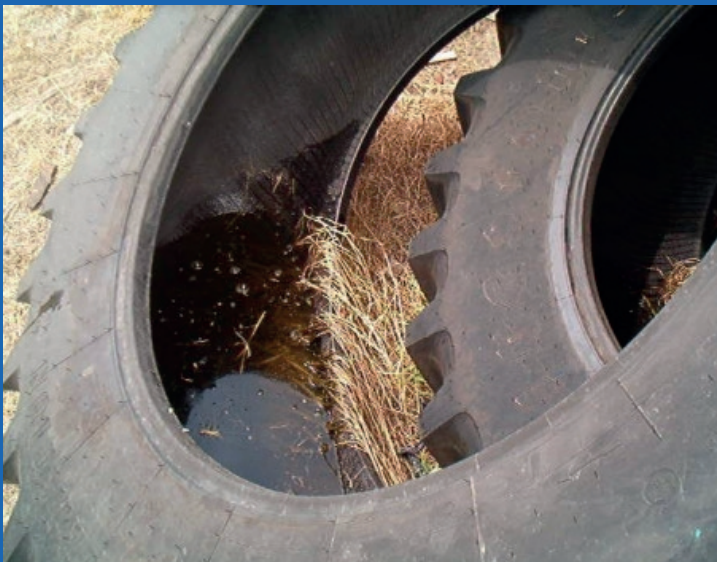
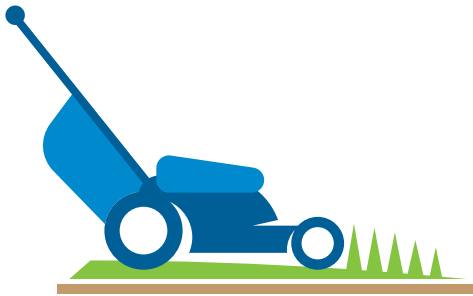


Site Assessments

■ Standing/stagnant water

■ Adult mosquitoes/larvae

■ Dense vegetation





Surveillance

Larvae collection

--- Dipper



Adult mosquito collection

--- CDC Gravid trap



STINKY WATER RECIPE (for 55 Gallons)

1 lb. - horse manure (semi-dry), 2 ounces - dried brewers yeast
2 ounces - egg white powder, 1 lb. - straw or grass clippings (dry)
1 – Small burlap bag*

- ◆ Place manure, brewer's yeast and egg white powder into a burlap bag and hand mix together well.
- ◆ Place a rock or fishing weight in the bottom of the bag that's large enough to weigh it down.
- ◆ Place straw or grass clippings in the burlap bag on top of the manure, brewer's yeast and egg white powder mixture.
- ◆ Fill the barrel with water.
- ◆ Twist the burlap bag and securely attach a sufficient length of cord to allow the bag to hang down half way in the barrel and lowered as the water is drawn down.
- ◆ Let stand for 3 – 4 days before use.

* Double bagging is not necessary



■ Surveillance ■

Larvae:

- Identify species.
- GPS locations for GIS mapping.
- Tailor larviciding to reduce dependence on adult mosquito control.
- Historical records of seasonal mosquito activity.

Adult:

- Use data to assess disease presence.
- ID geographic risk areas.
- Assess need for and timing of controls measures.
- Monitor control measure effectiveness to improve prevention.
- Better understand transmission cycles and vector species.

■ Public Education ■

Environmental Health Services offers:

- Site Assessments.
- Presentations upon request.
- Regularly hands out flyers on reducing mosquito breeding to public.
- Partners with other Departments.



Controls

(Reduction)



Parkers Pharma Limited, based in Germany, has come up with innovative preventive measures to control mosquitoes.



The program includes seven steps that focus on eliminating mosquito breeding sites, using insecticides, and incorporating repellents to keep mosquitoes at bay.

Application of control measures

Biological Controls

— Source reduction

Cultural/Physical Controls

Chemical Controls



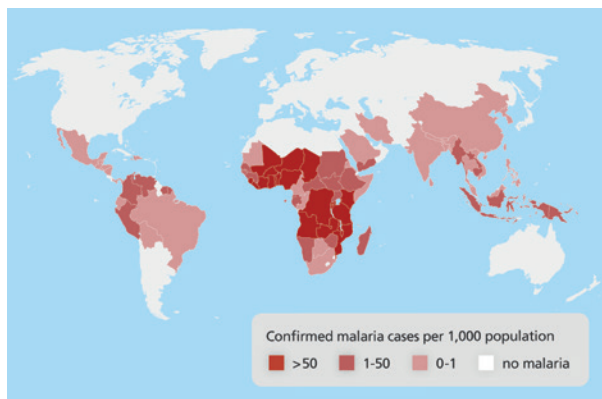


Malaria control

Challenges and prospects for treatment and prevention

KEY FACTS

- Globally in 2022, there were an estimated 249 million malaria cases and 608 000 malaria deaths in 85 countries.
- The WHO African Region carries a disproportionately high share of the global malaria burden.
- In 2022, the Region was home to 94% of malaria cases (233 million) and 95% (580 000) of malaria deaths.
- Children under 5 accounted for about 80% of all malaria deaths in the Region.



OVERVIEW

Malaria is a life-threatening disease spread to humans by some types of mosquitoes. It is mostly found in tropical countries. It is preventable and curable. The infection is caused by a parasite and does not spread from person to person. Symptoms can be mild or life-threatening. Mild symptoms are fever, chills and headache. Severe symptoms include fatigue, confusion, seizures, and difficulty breathing.



SYMPTOMS

The most common early symptoms of malaria are fever, headache and chills.

Symptoms usually start within 10–15 days of getting bitten by an infected mosquito.

Symptoms may be mild for some people, especially for those who have had a malaria infection before. Because some malaria symptoms are not specific, getting tested early is important.

Some types of malaria can cause severe illness and death. Infants, children under 5 years, pregnant women, travellers and people with HIV or AIDS are at higher risk. Severe symptoms include:

- **extreme tiredness and fatigue**
- **impaired consciousness**
- **multiple convulsions**
- **difficulty breathing**
- **dark or bloody urine**
- **jaundice (yellowing of the eyes and skin)**
- **abnormal bleeding.**

People with severe symptoms should get emergency care right away. Getting treatment early for mild malaria can stop the infection from becoming severe.

Malaria infection during pregnancy can also cause premature delivery or delivery of a baby with low birth weight.



■ Biological Controls ■

■ (Source Reduction)

B.t.i. (*Bacillus thuringiensis*)

- Larvacide that kills mosquitoes during the larval stage or development.
- It is made from a naturally occurring bacterium in the soil.
- The product kills larvae by damaging their digestive system.



(Briquets & Granular)

■ *Bacillus sphaericus* & *Bacillus thuringiensis subspceies israelensis*.

■ Larvacide that kills mosquitoes during the larval stage or development.

Attracitve Toxic Sugar

■ The special combination of fruit extracts in the formula acts as a bait to attract mosquitoes searching for a sugar meal, and the encapsulated garlic is a gut toxin.



■ Cultural/Physical ■ Controls (Source Reduction)

Stormwater Ponds:

- Retention/detention
- Water quality

Waste Disposal:

- Landfills
- Sanitary sewer

Drainage:

- Land grading
- Barrier placement

Maintenance:

- Lighting
- Structural repairs





Chemical control

Step 1 - Treat Standing Water

- Understanding Mosquito Breeding Sites.
- Identifying Potential Areas of Standing Water
(e.g., buckets, flower pots, gutters).
- Introduction to **SPINOMAX XRT** Tablets for Eliminating Mosquito Larvae.
- Application of **SILICACIDE** for Large Water Bodies.

SILICACIDE

Active Ingredient:

Polydimethylsiloxane 100 % (w/v)

Dose of Application :

- Application rate of 1 mL / m²
- Application rate of 10 L / ha





Chemical control

Step 2 - Treat Drainage Systems

- Importance of Proper Drainage Maintenance.
- Prevention of Stagnant Water Accumulation.
- Utilizing **SPINOMAX XRT** Tablets to Treat Standing Water in Drainage Systems.

SPINOMAX XRT

Active Ingredient:

Spinosad 6.25%

Dose of Application : Use at the rate of one tablet per 10 square meters of water surface.





Chemical control

Step 3 - Spray Homes Indoors and Outdoors

- Mosquito Insecticides: Effective Tools for Mosquito Control.
- Introduction to **CYBER M FOX**, **CYPHENOSUPER**, and **D-TETRA SUPER** Insecticides.
- Application Techniques for Indoor and Outdoor Areas.
- Peak Mosquito Hours: Dawn and Dusk.
- Emphasizing the Importance of Wearing Protective Clothing.

CYPHENOSUPER 10 EC

Active Ingredient:

Cyphenothrin 10% EC

Dose of Application :

- Dilution: For ULV application: Mix 1L - 50L of diesel, kerosene or water and apply 0.5L per 1 hectare.
- Dilution: For thermal fogging: Mix 1L - 50L of diesel, kerosene or water and apply 5L per 1 hectare.
- Dilution: For indoor residual spraying (IRS): Mix 1L - 100L of water and apply 1L per 200m².
- Dilution: For termite treatment: Mix 1L - 100L of water and apply 4L per 1m².
- Frequency: provides up to 4 weeks protection, and for longer protection period; different spraying equipment could be used.





Chemical control

Step 4 - Treat Unused Swimming Pools and Fountains

- Ensuring Clean and Well Chlorinated Swimming Pools.
- Preventing Mosquito Breeding in Unused Pools.
- Application of Silicacide to Treat and Eliminate Mosquito Larvae.

D-TETRASUPER 10 EC

Active Ingredient:

D-Tetramethrin 10% EC

Dose of Application :

Sites	Target Pests	Rate of Use	Safety Period
All types of Residential	Flying insects, House flies, Mosquitoes	20-30 ML / (10-15) LITER OF WATER	One day
All types of Residential	Crawling insects, Suckling Insects, Cockroaches, Bed bugs, Red & Black ants	60 ML / (20-25) LITER OF WATER	One day
ULV -COLD Fogging Treatment	Flying insects, House flies, Mosquitoes, stored insects pest	40-50 ML/(5-10) LITER OF WATER	One day
Thermal Fogging Treatment	Flying insects, House flies, Mosquitoes, stored insects pest	40 ML / (2-5) LITER OF WATER	One day





Chemical control

Step 5 - Treat Garbage Bins

- Understanding Mosquito Attraction to Decaying Smells.
- Application of **CYPERMFOX** or **CYPHENOSUPER** to Treat Outdoor Garbage Bins.
- Recommendations for Tightly Covering and Regularly Emptying Bins.

CYPERMFOX 10 EW

Active Ingredient:

Cypermethrin 10% EW

Dose of Application :

- Dilution: For space treatment, and thermal fogging:

Mix 50100- mL in 10 L of water to cover 200 m²

- Frequency: Reapply after 14 days





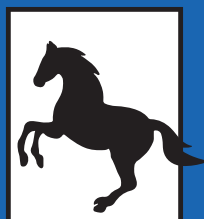
Chemical control

Step 6 - Treat Rooms with Cypermfox or Cyphenosuper or Mosquito Repellent

- Cypermfox or Cyphenosuper and Introduction to GREEN SHIELD Mosquito Repellent.
- GREEN SHIELD composition and natural ingredients.
- Proper Application of Repellent for Indoor Spaces.

Conclusion:

- Recap of Parkers Pharma Limited's Preventive Measures for Mosquito Control.
- Importance of Collaborative Efforts in Mosquito Control.
- Encouragement for Individuals to Take Responsibility for Mosquito Control.



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Thermal Fogger : Cyphenosuper



ULV Cold Fogger: Cypermfox



keep in touch



Parkers Pharma Limited
(United Kingdom)

41b Brunswick Street, Manchester
United Kingdom

Phone number: 00441615117852

Email: info@parkers-pharma.com



Parkers Pharma Limited
(Germany)

Sebastian , Bach Straße 19
04109 Leipzig

Germany,

Phone number: 004915751760228

Email: eu@parkers-pharma.com





MOSQUITO CONTROL GUIDE

This guide was prepared by
Parker Pharma Limited experts and contains all
the information related to mosquitoes and
methods of control.

