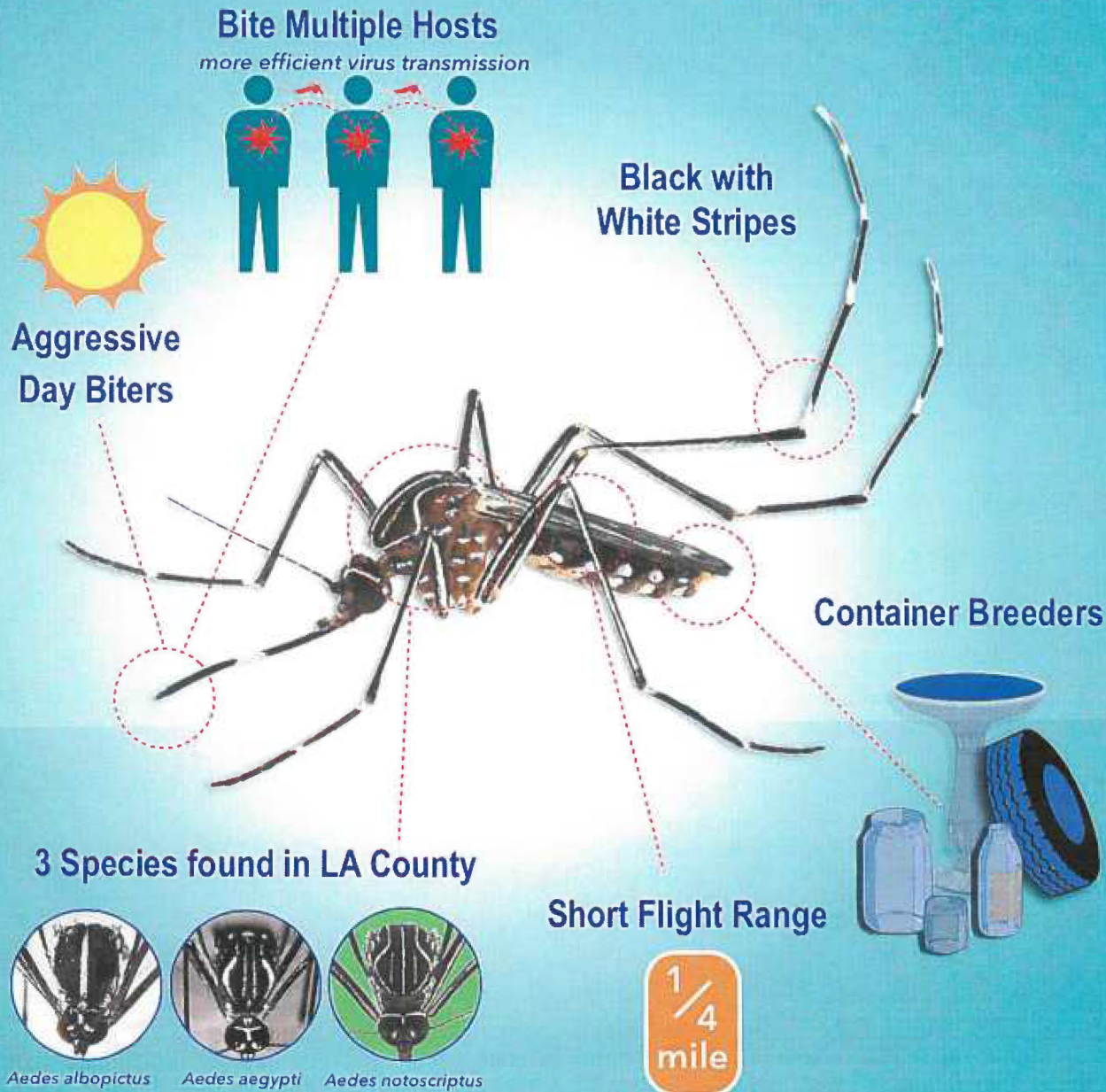
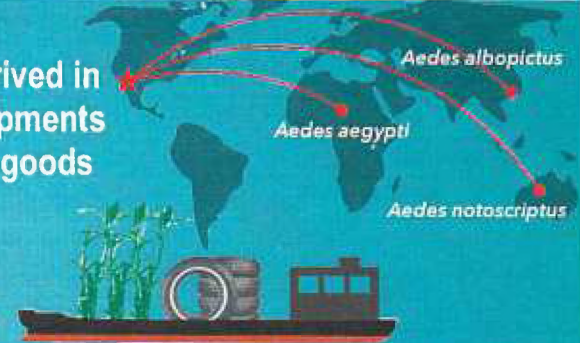


Mosquitoes INVASIVE Aedes

Aedes albopictus - Asian tiger mosquito
Aedes aegypti - Yellow fever mosquito
Aedes notoscriptus - Australian backyard mosquito



Arrived in
shipments
of goods



Eggs are laid on the
inside of containers,
just above the water
level



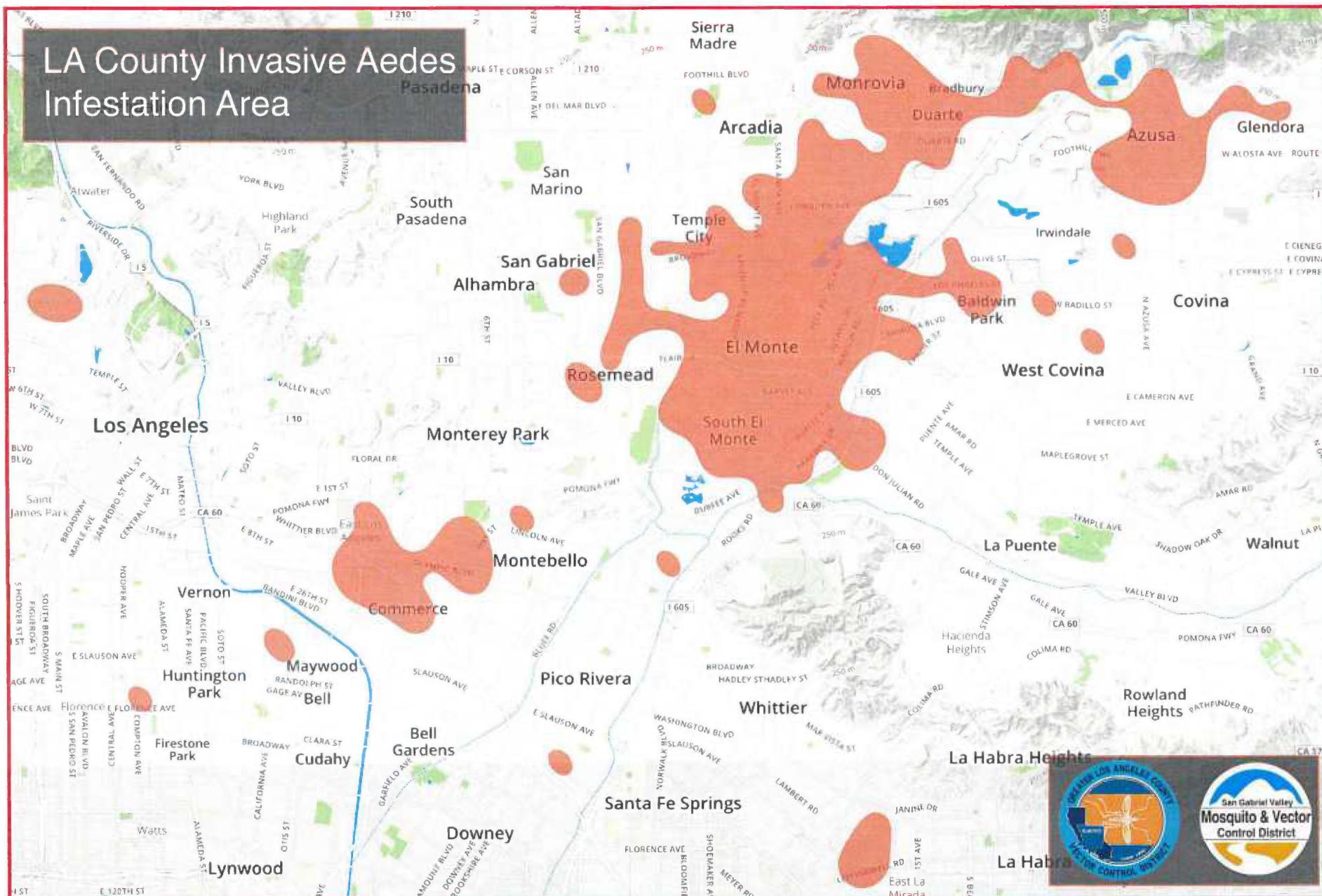
Eggs can lay
dormant for
several years while
waiting for the
right conditions

Aedes evolved to live
in close contact with
humans. Prefers
urban environments



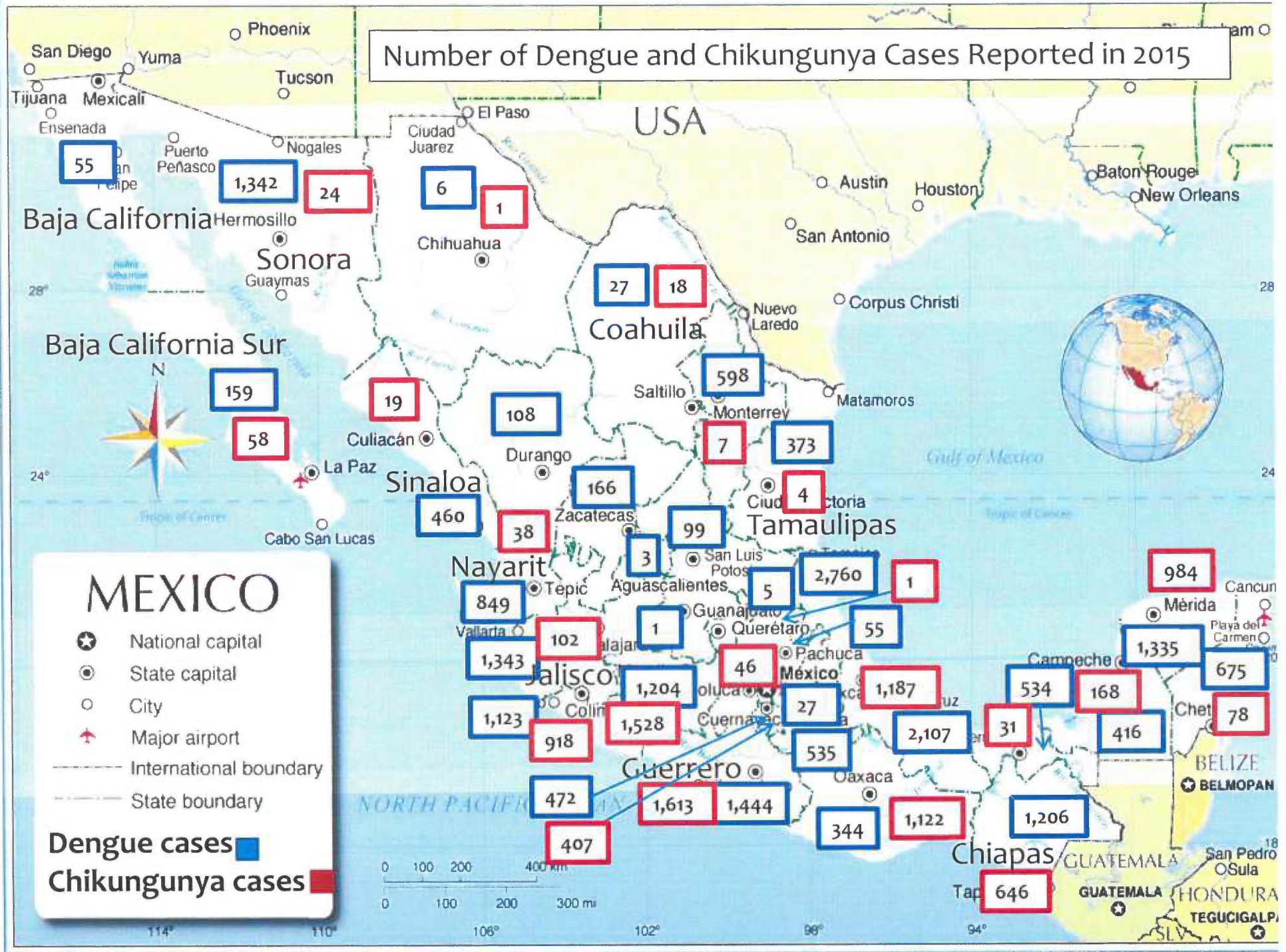
Best Defense:
DUMP and DRAIN
 standing water

LA County Invasive Aedes Infestation Area



Updated 10.09.15

Number of Dengue and Chikungunya Cases Reported in 2015



Chikungunya and Dengue in Mexico and Latin America

Certain regions of Mexico and Latin America have experienced a recent increase in chikungunya and continued dengue infections in 2014. Cases of locally transmitted chikungunya in the state of Chiapas were first reported in October 2014. As of December 31, 2014 a total of 155 chikungunya cases have been reported from five states: Chiapas (135), Guerrero (11), Oaxaca (7), Sonora (1), and Sinaloa (1).

Chikungunya has also been reported in the Caribbean and Central and South America, with over 26,000 confirmed cases reported through 2014.

Risk of dengue and dengue hemorrhagic fever also continued in 2014 in several Mexican states, including Baja California Sur (where Cabo San Lucas and La Paz are popular tourist areas) which reported 4,591 cases in 2014, an increase from 2013 and the largest number of reported cases among Mexican states. Dengue transmission has been prevalent throughout Latin American countries in recent years.

Mosquito vectors

Dengue and chikungunya viruses are transmitted by *Aedes albopictus* and *Aedes aegypti* mosquitoes. These two mosquitoes are aggressive day-biters that can potentially transmit the virus after biting an infected person. The immature stages typically develop in small, water- filled containers.

The presence of *Aedes aegypti* has been established in Mexican cities along the California-Mexico border, such as Mexicali, Tecate and Tijuana. In California, *Aedes aegypti* was detected in 2013 in three counties: Fresno, Madera, and San Mateo. Detections were made again in those same counties in 2014, with additional detections in Kern, Tulare, Los Angeles, and San Diego counties. In 2015, *Aedes aegypti* was detected for the first time in Imperial County. *Aedes albopictus* was detected in 2011 in the city of El Monte in Los Angeles County and has spread to 12 surrounding cities within the county.

Reported 2014 Cases in California

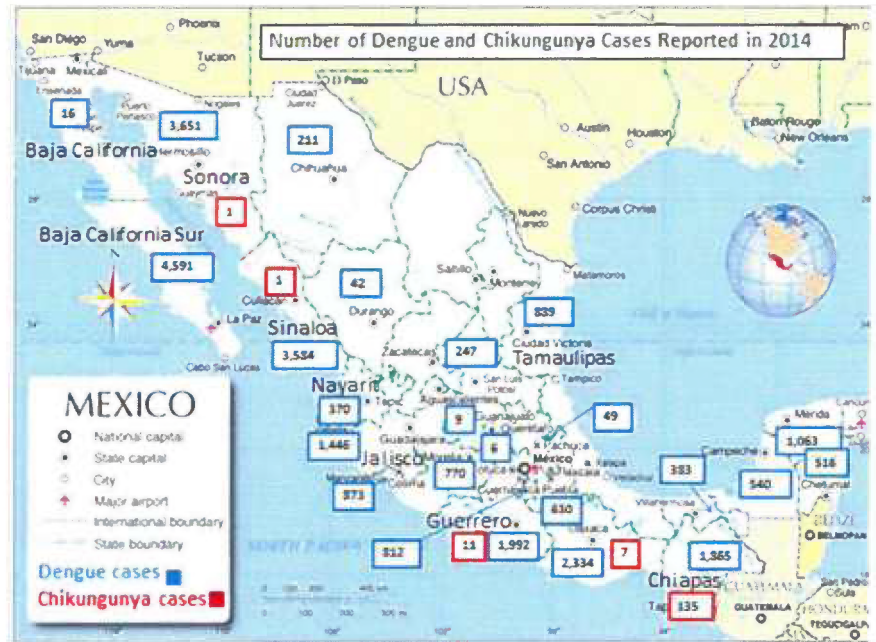
In 2014, 126 cases of dengue and 119 cases of chikungunya were reported in California, all with a history of travel to areas where transmission of those diseases was occurring. Of the reported cases, 67 dengue and 103 chikungunya cases had a history of travel to Latin America. The number of reported California dengue cases with a history of travel to Mexico has increased in the last two years, 64 in 2013-2014 compared with 17 in 2010-2012.

Dengue Clinical Presentation

Dengue is typically a mild, non-specific febrile illness and over half of infected people are asymptomatic. Classic dengue fever is characterized by acute onset of high fever 3 to 14 days after the bite of an infected mosquito. Symptoms often include severe headache, pain behind the eyes, muscle pain, joint pain, rash, and in severe cases bleeding manifestations. Infected individuals are viremic from approximately 1 day before to 4-5 days after onset of fever. Dengue has no animal reservoir and is not contagious person to person. Treatment is supportive.

Chikungunya Clinical Presentation

Chikungunya is characterized by acute onset of fever and severe joint pain. Chikungunya fever occurs 3-7 days after the bite of an infected mosquito. Joint pain and swelling are usually bilateral and symmetric involving the hands and feet and can be severe and debilitating. Other symptoms may include headache, muscle pain, fatigue, and rash. Acute symptoms typically resolve within 7–10 days. Unlike dengue, most people infected with chikungunya virus become symptomatic. Similar to dengue, chikungunya has no animal reservoir and is not contagious person to person. Treatment is supportive.



Recommendations for Physicians

- Review the epidemiology and signs and symptoms of dengue and chikungunya.
- Consider dengue or chikungunya in the differential diagnosis of febrile patients with signs and symptoms consistent with each disease who have traveled to a dengue or chikungunya endemic or outbreak area in the two weeks prior to symptom onset.
- Report suspect cases of dengue and chikungunya to the local health department, which can assist with coordinating tests needed to help confirm the diagnosis.
- If chikungunya is suspected, request tests for both dengue and chikungunya. Establishing the diagnosis of dengue is important because proper clinical management of dengue can improve outcome.
- Advise patients with suspect chikungunya or dengue to take measures to avoid being bitten by mosquitoes during the first week of illness.

Prevention

There are no vaccines to prevent chikungunya or dengue infections. Preventing mosquito bites is the only way to avoid becoming infected.

- Use insect repellents containing DEET, picaridin, IR3535, oil of lemon eucalyptus, or para-menthane-diol for long lasting protection. If you use both sunscreen and insect repellent, apply the sunscreen first and then the repellent.
- When weather permits, wear long-sleeved shirts and long pants.
- Use air conditioning or window/door screens to keep mosquitoes outside. If you are not able to protect yourself from mosquitoes inside your home or hotel, sleep under a mosquito bed net.
- Help reduce the number of mosquitoes outside your home or hotel room by emptying standing water from containers such as flowerpots or buckets.

Travelers

Warning – If you are travelling to a region affected by dengue or chikungunya, the California Department of Public Health (CDPH) recommends taking appropriate precautions for avoiding mosquito bites during the day and at night.

If you have returned from an affected region and have fever with joint pain or rash within the two weeks following your return, please contact your medical provider and tell the doctor where you have traveled.

Additional Resources:

For more information on what you can do to reduce risk of **chikungunya** infection, visit the U.S. Centers for Disease Control and Prevention (CDC) at: <http://wwwnc.cdc.gov/travel/diseases/chikungunya> and <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-mexico>

For more information on what you can do to reduce risk of **dengue** infection: <http://www.cdc.gov/dengue/prevention/index.html> and <http://www.cdc.gov/dengue/resources/factSheets/DengueBrochureFINAL.pdf>

For additional information on what you can do to protect yourself against mosquitoes: <http://wwwnc.cdc.gov/travel/yellowbook/2014/chapter-2-the-pre-travel-consultation/protection-against-mosquitoes-ticks-and-other-insects-and-arthropods>

Information for Clinicians: *Aedes aegypti* and *Aedes albopictus* Mosquitoes in California and Reporting Patients with Suspected Dengue or Chikungunya to Public Health
<http://www.cdph.ca.gov/HealthInfo/discond/Documents/DengueorCHIKInformationForCliniciansinCA.pdf>

For more information on invasive *Aedes* mosquitoes in California visit the CDPH, Vector-Borne Disease Section at: <http://www.cdph.ca.gov/HealthInfo/discond/Pages/Aedes-albopictus-and-Aedes-aegypti-Mosquitoes.aspx>

Informational Release

FOR IMMEDIATE RELEASE

10/23/2015



West Nile Virus Weekly Update

The Greater Los Angeles County Vector Control District (GLACVCD) continues to identify West Nile virus activity in Los Angeles County. Sixteen mosquito samples, 4 American crow, and 12 chickens tested positive this week. One mosquito sample collected from the city of Norwalk represents the first confirmation of WNV in that city this year. WNV is still actively transmitting throughout the southland and residents are strongly encouraged to take precautions to avoid mosquito bites.

Year to-date, GLACVCD has confirmed West Nile virus activity in:

- 64 cities/communities
- 200 mosquito samples
- 17 dead birds
- 31 sentinel chickens

Please visit our [West Nile virus statistics page for the latest information.](#)

GLACVCD encourages residents to take the following safety precautions to protect against mosquito-borne diseases:

- Eliminate or manage all sources of standing water to discourage mosquito breeding *every week*. The work residents do now will make a big difference.
- If you are outdoors when mosquitoes are biting, wear long pants and long-sleeved shirts and use an insect repellent containing EPA-registered active ingredients such as DEET, Picaridin, IR3535, and Oil of lemon eucalyptus (PMD). Always apply according to label instructions.
- Make sure doors and windows have tight-fitting screens. Repair or replace

screens that have tears or holes.

- Contact us at 562-944-9656 or visit glacved.org if there is a significant problem or potential mosquito breeding source where you live or work.

What is West Nile virus?

West Nile virus is transmitted to people and animals through the bite of an infected mosquito. There is no cure for West Nile virus. One in five persons infected with West Nile virus will exhibit symptoms. Symptoms usually occur between five and 15 days, and can include fever, headache, body aches, nausea, or a skin rash. These symptoms can last for several weeks to months. One in 150 people infected with the virus will become extremely ill. Severe symptoms include high fever, muscle weakness, neck stiffness, coma, paralysis, and possibly death.

###

Mosquito Bite Prevention (United States)

Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.



Type of Mosquito

Aedes aegypti,
Aedes albopictus

Viruses spread

Chikungunya,
Dengue

Biting habits

Daytime



Culex species

West Nile

Dusk (evening) to
dawn (morning)

Protect yourself and your family from mosquito bites

Use insect repellent

Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. All EPA-registered insect repellents are evaluated for safety and effectiveness.

Active ingredient

Higher percentages of active ingredient provide longer protection

DEET

Picaridin, also known as **KBR 3023**, **Bayrepel**, and **icaridin**

Oil of lemon eucalyptus (OLE) or **para-menthane-diol (PMD)**

IR3535

Some brand name examples

Off!, Cutter, Sawyer, Ultrathon

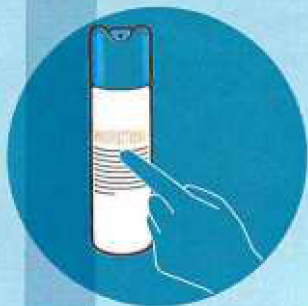
Cutter Advanced, Skin So Soft Bug Guard Plus, Autan (outside the United States)

Repel

Skin So Soft Bug Guard Plus Expedition, SkinSmart



Protect yourself and your family from mosquito bites *(continued)*



- ◆ Always follow the product label instructions.
- ◆ Reapply insect repellent every few hours, depending on which product and strength you choose.
 - » Do not spray repellent on the skin under clothing.
 - » If you are also using sunscreen, apply sunscreen first and insect repellent second.

Natural insect repellents (repellents not registered with EPA)

- ◆ EPA has not evaluated natural insect repellents for effectiveness.
 - » Examples of ingredients used in unregistered insect repellents include: citronella oil, cedar oil, geranium oil, peppermint oil, or soybean oil.

If you have a baby or child



- ◆ Always follow instructions when applying insect repellent to children.
- ◆ Do not use insect repellent on babies younger than 2 months of age.
- ◆ Dress your child in clothing that covers arms and legs, or
 - ◆ Cover crib, stroller, and baby carrier with mosquito netting.
 - ◆ Do not apply insect repellent onto a child's hands, eyes, mouth, and cut or irritated skin.
 - » Adults: Spray insect repellent onto your hands and then apply to a child's face.

Treat clothing and gear



- ◆ Treat items such as boots, pants, socks, and tents with permethrin or purchase permethrin-treated clothing and gear.
 - » Permethrin-treated clothing will protect you after multiple washings. See product information to find out how long the protection will last.
 - » If treating items yourself, follow the product instructions.
 - » Do not use permethrin products directly on skin.

Mosquito-proof your home



- ◆ Use screens on windows and doors. Repair holes in screens to keep mosquitoes outside.
- ◆ Use air conditioning when available.
- ◆ Keep mosquitoes from laying eggs in and near standing water.
 - » Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers. Check inside and outside your home.



COUNTY OF LOS ANGELES ♦ DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH

Cross Connection & Water Pollution Control Program
5050 Commerce Drive, Baldwin Park, CA 91706
Tel (626) 430-5290 FAX (626) 813-3025

**REQUIREMENTS FOR THE INSTALLATION AND PIPELINE CONSTRUCTION FOR
SAFE REUSE OF RAINFALL / RUN-OFF, NON-POTABLE CISTERN
WATER AND URBAN RUN-OFF WATER
(Rev. 09.21.09)**

Rain barrels and cisterns are methods of storing rainfall and run-off on-site for landscape irrigation purposes. In semi-arid Los Angeles County, rainfall, run-off and the reuse of captured rainfall could greatly reduce the amount of water that must be imported. For this reason, there should be no reasonable impediment to storing and reusing rainfall and run-off, provided it can be done safely while protecting the health of the public.

As a result of increased interest and initiative to use untreated rainfall/non-potable cistern water and urban run-off water for onsite landscape irrigation purposes, the Department of Public Health (the Department) has found it necessary to develop the following requirements for water pipeline construction, installation and safe re-use of "non-potable" water supplies. The purpose of these requirements is to provide the necessary procedures for obtaining approval for the installation of pipeline which will convey untreated rainfall, non-potable cistern water and /or urban run-off water for irrigation purposes. Moreover, it is intended to establish requirements for the protection of the potable domestic water supply as well as public health.

PLEASE NOTE:

Presently within the County of Los Angeles there are no regulatory definitions of rainfall, non-potable cistern water or urban run-off that would categorize them as either recycled / reclaimed water or other regulated water source. These types of non-potable water sources are categorized within the scope of "alternate non-potable water supply". Therefore rainfall/run-off, non-potable cistern and urban run-off water, for the purposes of these requirements shall be recognized by the Department (pending adoption of proposed regulation) as "alternate non-potable water supply sources" and regulations pertaining to the protection of the domestic water supply in relation to an "alternate non-potable water supply sources" shall apply.

The following requirements are intended to focus on projects which integrate below grade pipelines, pumps and large capacity holding tanks. They are not intended for application to rain barrels that collect rainfall / run-off water from residential rooftops, gravity fed or hand-held hoses. For the residential types of projects which do not incorporate below grade plumbing, pumps and large capacity tanks, please contact your local City Building & Safety Department.

Treatment systems for rain, gray and urban run-off water for reuse in toilet flushing have been proposed but are not covered within these requirements. Please contact the Department at (626) 430-5270 for information regarding treatment strategies and reuse.

These requirements apply to collection and reuse for **on-site purposes only**. Distribution of collected rainfall/non-potable cistern and urban run-off to off-site properties shall be evaluated by State Department of Public Health (CADPH) in conjunction with State Regional Water Control Board (RWQCB).

DEFINITIONS:

Alternate non-potable water supply is a non-potable source of water which includes gray water, rainfall/run-off non-potable cistern water, urban run-off, on site treated water and recycled/reclaimed water.

Cistern (non-potable) refers to a receptacle or rainwater catchment system for storing water, usually underground, which captures non-potable water run-off for the purposes of reusing the water for irrigation purposes. Non-potable cisterns are distinct from potable cisterns that are installed and managed as potable water reservoirs/storage.

Gray water refers to untreated waste water which has not come into contact with toilet waste. Gray water includes used water from bathtubs, showers, bathroom wash basins, clothes washing machines and laundry. It does not include waste water from kitchen sinks, photo lab sinks, dishwashers or laundry water from soiled diapers.

Non-Potable Water refers to water which is not intended for human consumption. Two distinct variations are inclusive in this definition: Non-potable water from a potable source, via a dedicated backflow prevention device vs. untreated non-potable water from collection methods that never originated from a potable source. The term non-potable water is all-inclusive with respect to the various non-potable water supplies mentioned within these requirements.

Onsite Water Supervisor refers to that person appointed, as provided for under Title 17, Section 7586, California Code of Regulations who is responsible for the protection of the potable water system from cross connections. This person is responsible for installation, operation, maintenance of the rain-fall / non-potable cistern water and potable water systems, prevention of potential hazards, implementation of these requirements, and coordination the Department.

Potable Water refers to water which is fit for consumption by humans and other animals. The U.S. Environmental Protection Agency (EPA) identifies contaminants that may adversely affect public health that occur in drinking water with a frequency and at levels that pose a threat to public health. The EPA establishes maximum contaminant levels (MCLs) (both biological and chemical) permissible in drinking water. These MCLs become enforceable standards.

Rainfall/ Non-potable Cistern Water refers to the harvested rainwater/storm water collected within a cistern from a rain event and/or urban run-off. Cisterns in Los Angeles County may serve as a secondary source of water for applications that do not require potable water, such as landscape irrigation, which can dramatically lower the potable water demand and reducing off-site rainfall run-off.

Recycled / Reclaimed Water refers to tertiary-treated water produced from the three-stage treatment of municipal wastewater. Recycled / reclaimed water is allowable for full-body human contact but not for direct human consumption. Purple pipe is the designated pipeline material specifically allowed to convey tertiary treated recycled / reclaimed water. Other non-potable water sources as mentioned in these requirements shall **not** use purple pipe. Untreated stored rainfall/run-off should not be confused with tertiary treated wastewater, defined in Title 22 of the California Code of Regulations.

Urban run-off – refers to non-potable water from a dry weather run-off catchment system used for the collection of water run-off which does not necessarily come from a rain event.

PROCEDURES:

PLAN REVIEW AND SUBMISSION

1. Plans and specifications for the rainfall/non-potable cistern water capture, distribution, use and operational practices shall be submitted for review and approval to the Department prior to implementation. The applicable Building & Safety Departments having jurisdiction shall also be notified for approval.
2. County of Los Angeles will review and approve the plans to ensure safe re-use practices, correct labeling of pipelines and appropriate separation from potable water supplies and sanitary sewer lines.
3. Prior to commencing new or retrofit construction the contractor or installer shall contact the Department to arrange for inspection of all on-site rainfall/non-potable cistern water and potable water work. No excavation or open trench may be backfilled without first securing the Department approval. If any piping, rainfall/non-potable cistern water or potable water is installed prior to plan check approval and/or inspection, all or any portion of the system may be required to be exposed and corrected as necessary.
4. The rainfall/cistern water system shall be constructed in conformance with potable water system construction standards and in accordance with all other governing codes, rules and regulations.
5. Unused or abandoned potable water lines are to be severed as close to water mains as practical, capped and a four-foot section of abandoned line removed and the cap cemented under the Department's supervision.

REQUIRED SEPARATION OF LINES

In order to minimize construction accidents resulting in pipeline breaks, which may pollute the domestic water supply or accidental cross-connections between rainfall/non-potable cistern water and potable water systems, maximum attainable separation of non-potable cistern water lines and potable water lines is required.

- **Parallel Construction:** There shall be at least a four foot (4') separation for all pressure mains, all distances measured from pipeline outside diameter. In restricted areas where 4 foot separations cannot be met, the use of sleeved pipe is required.
- **Cross-Over Construction:** Perpendicular pipeline installation is set at a one foot (1') separation, with potable above rainfall/non-potable cistern water, and one full pipe length centered over crossing.
- **Alternative Cross-Over construction** (distance not maintained): Either the rainfall/non-potable cistern water may be sleeved with the same class piping (usually schedule 40 PVC) for one full pipe length (minimum four feet) centered over the cross-over.

Existing On-site piping – To the extent feasible, maximum separation of rainfall/non-potable cistern water and potable water lines shall be practiced upon system addition or modification.

IDENTIFICATION OF LINES

All rainfall/non-potable cistern water main lines, valve boxes and appurtenances shall be identified to clearly distinguish between non-potable cistern water and potable water systems. Specific wording on identification tape shall be required. Evaluation shall be on a case-by-case basis, but with the understanding that the minimum requirement for pipeline identification is per the Uniform Plumbing Code. The following identification tape will be accompanied with respective tags of the same colors and wording for all valve boxes, vaults, control valves, quick couplers, outlets and related appurtenances, if applicable.

- a. **POTABLE WATER** – All potable water lines shall be installed in accordance with the Uniform Plumbing Code and all other governing codes, rules and regulations. Buried potable water lines shall be identified by continuous tape with lettering on three inch (3”) minimum width green or blue tape with one inch black lettering bearing the continuous wording “**Potable Water**”. Identification tape shall be permanently affixed to the pipeline at five foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults, exposed piping and hydrants. Identification tape is not necessary for extruded colored PVC with continuous wording “**Potable Water**” printed in contrasting lettering on opposite sides of the pipe.
- b. **RAINFALL/NON-POTABLE CISTERN WATER** – All rainfall/non-potable cistern water lines (pressure/non-pressure) shall be identified by continuous lettering on three inch (3”) minimum width YELLOW tape with one inch black lettering bearing the continuous wording “**Caution – Non-potable Cistern Water, Subsurface Irrigation Only**” permanently affixed at five foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults and exposed piping.
- c. **NON-POTABLE WATER** – All non-potable irrigation/industrial water lines (pressure/non-pressure) shall be identified by continuous lettering on three inch (3”) minimum width yellow tape with one inch black lettering bearing the continuous wording “**Non-Potable Water**” permanently affixed at five foot intervals atop all piping. Identification tape shall extend to all valve boxes and/or vaults, exposed piping, hydrants and quick couplers.
- d. Tags, respective of each water supply, shall be identified with the appropriate wording on both sides with the inclusion of a universal symbol.

OPERATIONAL GUIDELINES AND SPECIFICATIONS

1. Irrigation systems utilizing untreated rain-fall/non-potable cistern water shall only be by means of *subsurface irrigation. Misting or spraying into the air is prohibited. Irrigation practices shall be controlled to prevent surface runoff from lands owned or controlled by the user. (***For above grade spray irrigation, the level of treatment would necessitate Title 22 Standards to ensure the removal of pathogens. Please contact the Department for more information**).

2. Any pipeline other than potable water that is installed within a structure shall conform to all building code standards and shall be "barber shop" wrapped with the respective continuous identification tape and without any interconnections with the potable water system.
3. Gray water systems, rain-fall/runoff non-potable cistern systems and recycled water systems are not to be interconnected. Each shall be installed as stand alone systems completely separate from one another. Gray water systems are directly connected to the sewage system. Rain-fall/non-potable cisterns are not to be directly connected to a sewer system. For gray water installation requirements refer to California Plumbing Code 2007, Chapter 16/Appendix G (DWR).
4. Cisterns/storage vessels shall be adequately covered to prevent mosquito breeding.
5. Contact with untreated rainfall/non-potable cistern should be kept to a minimum.
6. Deteriorated or inadequately protected water well casings shall be protected against contamination by untreated rainfall/non-potable cistern water by correcting these physical deficiencies. Surface infiltration of untreated rainfall/run-off is allowed provided it occurs at least 10 feet from an unprotected foundation structure, there is a least 10 feet of clearance to the seasonal high ground water table, and it occurs at least 100 feet from a water supply well.
7. An **On-Site Water Supervisor** shall be appointed as provided for under Title 17, Section 7586, California Code of Regulations. Authorizations for any piping changes or additions to either the potable or recycled wastewater systems shall be subject to review and approval by the water supervisor. The name and position of this individual shall be reported to the water purveyor and to the Department.
8. As-built plans shall be prepared and updated as necessary by the user showing the location of rainfall /non-potable cistern water and potable water system piping.
9. To prevent secondary exposure to rainfall/non-potable cistern water, hose bibbs and quick couplers shall not be permitted in order to prevent both the unauthorized use of said water supply and secondary exposure of untreated non-potable water supply. Quick-couplers are presently not allowed on non-potable cistern systems.
10. A potable water source may be connected via an approved backflow prevention device to provide a back up water source to a non-potable water cistern. A non-potable water backup supply line from a potable source via an approved backflow prevention device **can** be directly connected to the rain-fall/non-potable cistern discharge line to the irrigation system. Gray water systems **cannot** be directly connected to a potable supply with or without a backflow prevention device, (air gaps are excluded) (2007 California Plumbing Code, Section 603.3.5). Air gaps are the only method as a potable water make-up to a gray water system.
11. A pressure test/cross-connection test shall be performed to confirm the physical separation of the storm water/cistern water and potable water systems. Said testing shall be performed in conjunction with the Water Purveyor and this Department and conducted before the introduction of rainfall/non-potable cistern water.

12. The Department shall refer all plans proposing to install a cistern to the following agencies prior to construction:

- Los Angeles County Cross-Connection & Water Pollution Control Program to: initiate the plan proposal; conditional approval; interim construction inspections and final approval.
- The City or County Building & Safety Department for construction permits and inspections (Building Codes).
- The local water purveyor regarding required backflow protection at the potable/city water service connection(s).
- The Mosquito Abatement District for conditions of approval and to register the cistern tank.
- The City or County Public Works Department for cistern tank overflow discharge requirements.

**CROSS
REFERENCE:**

California Health & Safety Code 116800-116820
California Code of Regulations, Title 22, Div. 4, Chapter 3
Los Angeles County Code – Title 11 and Title 28
2007 California Plumbing Code, Chapter 6, Appendix G & J.



Checklist for Minimizing Vector Production in Stormwater Management Structures

Management of mosquitoes and other vectors in stormwater management structures, such as flood control basins and Best Management Practices, is critical for protecting public health. With careful planning, such structures can be designed, built, operated, and maintained in a manner that minimizes opportunities for the proliferation of vectors. This publication provides checklists of action items intended to lessen the short and long-term potential for vector production in stormwater management structures while reducing dependence on pesticides to the maximum extent possible. With the wide variety of structures and build locations, it is anticipated that not all action items will apply to every project. Answers to frequently asked questions follow the checklist.

For simplicity, stormwater management structures have been divided into three categories, each with specific considerations. Certain structures may require reference to more than one checklist.

Dry Systems. Any structure designed to drain completely following capture and/or treatment of runoff. Examples include flood control basins, extended detention basins, infiltration basins and trenches, Austin sand filters, swales and strips, drain inlet inserts, linear-radial gross solids removal devices. Permanent-water features sometimes included as part of dry system design, such as micropools, should be considered separately using the checklist for “wetlands”.

Wet Systems. Any structure designed with features such as sumps, vaults, and/or basins that hold water permanently, or longer than 4 days. Examples include open catch basins, concrete retention basins, Delaware sand filters, and a variety of belowground proprietary devices.

Wetlands. Any structure constructed as a naturalistic system with permanent surface waters, regardless of the formal given name (e.g., stormwater pond, retention basin, wet basin, constructed wetlands, treatment wetlands, etc.). This section also applies to permanent-water features sometimes included as part of dry system design such as micropools.

*Additional information is available from the California Department of Public Health
<http://www.cdph.ca.gov/HealthInfo/discond/Pages/MosquitoBorneDiseases.aspx>
and from the University of California, Division of Agriculture and Natural Resources (UCANR)
<http://www.ipm.ucdavis.edu/PDF/MOSO/mosquitostormwater.pdf>*

To facilitate public health mosquito control, it is strongly recommended that project locations be provided to the local vector control agency. To locate your local mosquito and vector control agency, go to <http://westnile.ca.gov> and search by zip code.

WET SYSTEMS

Recommended strategy: Deny mosquito access to standing water by using covers, screens, and/or other barriers.

- ☐ Have sumps, vaults, or basins that hold water permanently, or longer than 4 days, been completely or partially sealed against adult mosquito entry?
- ☐ If used, are covers tight fitting, with gaps or holes of no greater than 1/16" (2 mm)?
- ☐ If used, are aluminum or nylon screens for sealing small openings secured with gaps or holes of no greater than 1/16" (2 mm)?
- ☐ If cast iron manhole covers are used, are pick holes sealed or is a mosquito-proof insert provided below?
- ☐ Where feasible, are the inlet and/or outlet conveyance pipes submerged to prevent adult mosquito entry into the main water storage area?
- ☐ Where feasible, are conveyance pipes fitted with flapper valves, collapsible fabric tubes, or other barriers to prevent adult mosquito entry into the main water storage area?
- ☐ Is the structure designed with safe and sufficient access to permanent water areas for inspection, maintenance, and/or vector control activities when needed?
- ☐ Does the operation and maintenance plan include a minimum of quarterly inspections to ensure that barriers to mosquito entry are intact and in place as designed?
- ☐ Where possible, is signage provided with minimum information indicating type of structure (e.g. CDSTM), ownership, and contact information?

8. *Will surface agitators prevent mosquito production?*

Agitators, sprinklers, or other means of disturbing the water surface will discourage females from laying eggs and can kill larvae, however, in order to be effective the entire surface must be disturbed.

9. *It seems that controlling mosquitoes in belowground stormwater systems without resorting to chemical treatment is rarely successful. How do we deal with this problem?*

Field research has documented the difficulty in controlling mosquitoes in belowground stormwater systems without chemicals (i.e. exclusion of mosquitoes was successful in a few systems studied, but the vast majority of attempts resulted in only marginal reductions). However, for reasons that are not entirely understood, not all belowground systems produce mosquitoes equally; some are sporadic and some are year-round producers. It is strongly recommended that the local vector control agency be consulted to determine site-specific monitoring and control needs.

Frequently Asked Questions

WET SYSTEMS

1. Our stormwater treatment BMPs are installed belowground and covered. Why should we be concerned about mosquitoes?

Unfortunately, certain species of mosquitoes capable of transmitting disease are well-adapted for finding and breeding in belowground habitats. These mosquitoes can access belowground sources through openings as small as **1/16" (2mm)** and they can fly great distances through pipes.

2. We wish to install a belowground proprietary BMP in a new housing development. If we seal the access covers against mosquitoes, how far away should we design the inlet grates to keep mosquitoes from accessing the permanent-water sump?

The absolute flight limits of mosquitoes that can breed belowground are unknown; however, recent studies found that females could fly at least 80 feet through 4" diameter pipe to reach a source of standing water and were unaffected by changes in pipe course. It is unlikely that mosquitoes can be excluded from underground sources using conveyance pipe length alone.

3. We are considering the addition of weep holes to our belowground sumps to allow them to dewater between storms so they do not produce mosquitoes. Will this work?

Weep holes are typically not a reliable choice for preventing mosquito production due to their high probability of failure due to clogging.

4. I was told that mosquitoes can not breed in water with a visible oil sheen on the water surface. Is this true or false?

With some exceptions, this is false. In most cases, the oil sheen visible on the water surface is not uniform, but is broken. Certain species of mosquitoes capable of transmitting disease can exploit these habitats by using the oil-free areas for egg laying and larval development. In addition, surface oils are broken down over time, disappearing altogether if not regularly replenished by oily runoff.

5. We are considering a provision to dewater our belowground sumps after every storm event to prevent mosquito production. Will this be effective?

It has the potential to be effective, but there are several complicating factors to consider:

1) dry-weather urban runoff frequently replenishes belowground sumps making pumping efforts futile, and 2) pumps often leave a small amount of residual water in the bottom of the sumps, and water as shallow as 1/16" or less can be sufficient to allow mosquito larvae to develop.

6. Our stormwater sumps contain very deep water. Will this prevent mosquito production?

Unlike deep water zones in ponds and wetlands where mosquitoes generally do not develop due to predators, wind, and wave action, mosquitoes are unaffected by water depth and/or surface area in belowground systems.

7. Will flowing water prevent mosquito production?

Flowing water will discourage females from laying eggs and can kill larvae. For example, a vortex separator receiving year-round flow from an urban stream should not produce mosquitoes due to constant movement of the entire water surface area. However, water flow through systems with square sumps (or sumps of other geometrical shapes) may not completely eliminate mosquito production due to the stagnant zones created in the corners where water movement is minimal.

INVASIVE MOSQUITO ALERT

ALERTA DE MOSQUITO INVASOR

入侵蚊子警報

New Mosquitoes Are Changing Our Way of Life in Los Angeles County

Nuevos mosquitos están cambiando nuestro estilo de vida en el Condado de Los Angeles

新的蚊子正在改變我們洛杉磯縣的生活方式

- Dengue fever, yellow fever, and chikungunya threats are increasing. Learn why.
- Learn about black-and-white, daytime-biting mosquitoes!
- Las amenazas de fiebre del dengue, fiebre amarilla y chikungunya están aumentando. Descubra por qué.
- ¡Aprenda sobre los mosquitos color blanco y negro que pican durante el día!
- 登革熱、黃熱病和基孔肯亞熱威脅正在增加。請瞭解原因。
- 瞭解黑白色在晝間叮咬的蚊子！



Need this in **Vietnamese** or **Korean**?
Visit www.glacvcd.org





New Mosquitoes in Southern California

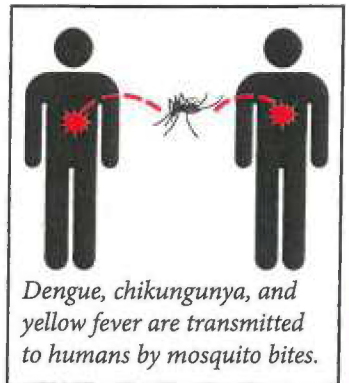
Global travel and trade have opened doors to invasive mosquitoes. Three new species making Southern California their home are the **Asian tiger** (*Aedes albopictus*), **yellow fever** (*Aedes aegypti*), and **Australian backyard** (*Aedes notoscriptus*) mosquitoes. These mosquitoes adapt well to urban environments. Once introduced, they can thrive in our neighborhoods. While the Greater Los Angeles County Vector Control District is working hard to fight these invasive insects, we can't do it alone.

We Need Your Help.

Why Does it Matter?

If you live or work in Southern California, you are at risk of being exposed to these black-and-white, daytime-biting mosquitoes.

The Asian tiger and yellow fever mosquitoes can transmit debilitating dengue, chikungunya and yellow fever viruses. Chikungunya and dengue epidemics are expanding in the Americas and are growing threats to California. The Australian backyard mosquito can transmit encephalitis-causing viruses and canine heartworm, which increases the health risk to our pets. **Infected travelers can bring these viruses into California, which may result in local outbreaks.**



Dengue, chikungunya, and yellow fever are transmitted to humans by mosquito bites.

What are the Symptoms?

» Dengue Fever ("Breakbone Fever")

- Severe headache / eye pain
- Severe muscle / joint pain
- High Fever

» Yellow Fever

- Nausea and vomiting
- Fever
- Can progress to jaundice, internal bleeding and shock

» Chikungunya (Chik-un-GOON-ya)

- Debilitating joint/muscle pain (can last for many months)
- Fever



Australian backyard mosquito
Photo Credit: Jared Dever, OCVCD



How to Find Them Around Your Yard and Inside Your Home or Office

These mosquitoes can live and complete their life cycle either indoors or outdoors. Eggs are laid along the waterline of any water-holding container such as flower vases, plant saucers, buckets, used tires, and even plants that hold water like bamboo or bromeliads. Eggs can remain alive for years, and hatch into larvae when conditions are right.

Look for:

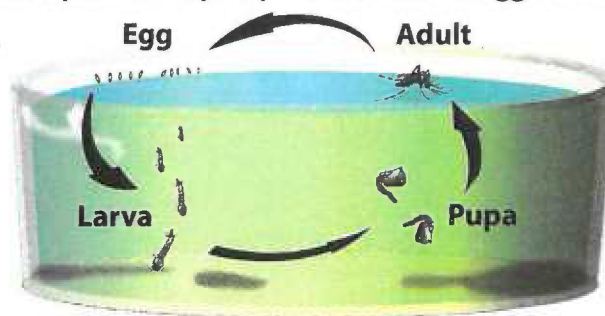
- small, black mosquitoes with white stripes.
- mosquitoes active and biting during the day -- even indoors!
- immature mosquitoes (larvae and pupae) swimming in stagnant water.

Actual Size



1/4 Inch

Mosquito Life Cycle (One week from egg to adult)



How to Stay Mosquito-Free

- Remove or drill holes in the bottom of all plant pots, saucers, barrels, bins, and old tires.
- Do not keep water in buckets or root plant cuttings in water. Sharing plant cuttings can spread mosquito eggs.
- Cover trashcans, toys and recycle bins, and keep unneeded items out of the rain.
- Ensure rain barrels are properly sealed since mosquitoes can lay thousands of eggs inside them.
- Wear insect repellent containing DEET, Picaridin, IR 3535 or oil of lemon eucalyptus.



Report Black-and-White, Daytime-biting Mosquitoes
562-944-9656 or www.ReportMosquitoes.org



Nuevos mosquitos en el Condado de Los Ángeles

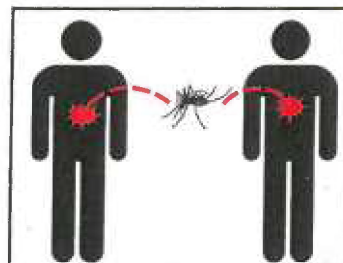
El comercio y los viajes mundiales han abierto las puertas a mosquitos invasores. Tres nuevas especies que se han instalado en el sur de California: **El mosquito tigre asiático** (*Aedes albopictus*), **el mosquito de la fiebre amarilla** (*Aedes aegypti*) y **el mosquito de patio trasero australiano** (*Aedes notoscriptus*). Estos mosquitos se adaptan bien a los entornos urbanos. Una vez introducidos, pueden prosperar en nuestros vecindarios. Aunque el Distrito de Control de Vectores del Condado del Gran Los Ángeles está trabajando intensamente para luchar contra estos insectos invasores, no podemos hacerlo solos.

Necesitamos su ayuda.

¿Por qué es importante?

Si vive o trabaja en el condado de Los Ángeles, está en riesgo de verse expuesto a estos mosquitos color blanco y negro que pican durante el día.

Los mosquitos tigre asiático y de la fiebre amarilla pueden transmitir virus debilitantes como fiebre del dengue, chikungunya y fiebre amarilla. Las epidemias de chikungunya y dengue son más frecuentes en las Américas y representan una constante amenaza en California. El mosquito de patio trasero australiano puede transmitir los virus causantes de la encefalitis y dirofilariasis canina (enfermedad del gusanos del corazón) en perros, lo que aumenta el riesgo para la salud de nuestras mascotas. **Los viajeros infectados pueden traer estos virus a California, lo cual puede ocasionar brotes locales.**



Las fiebres del dengue, chikungunya y amarilla se transmiten a los seres humanos mediante picaduras de mosquito.

¿Cuáles son los síntomas?

- » La fiebre del dengue ("Fiebre quebrantahuesos")
 - Dolor de cabeza grave / dolor en los ojos
 - Dolor grave muscular o de las articulaciones
 - Alta temperatura
- » Fiebre amarilla
 - Náusea y vómitos
 - Fiebre
 - Puede avanzar hacia la ictericia (color amarillento de piel y ojos), hemorragia interna y shock
- » Chikungunya
 - Dolor debilitante de las articulaciones o músculos (puede durar muchos meses)
 - Fiebre



Mosquito del patio trasero australiano
Crédito de la foto: Jared Dever, OCVCD

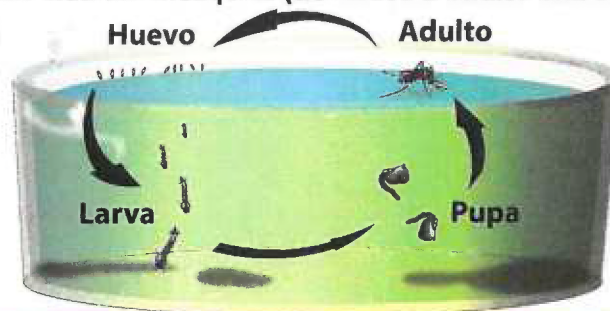
Cómo encontrarlos alrededor de su patio y dentro de su hogar u oficina

Los mosquitos ponen sus huevos a lo largo del nivel del agua de cualquier recipiente que contenga agua, como floreros, platillos para plantas, baldes, llantas usadas e incluso plantas que contienen agua como el bambú o las bromelias. Los huevos pueden permanecer vivos durante años y emergen como larvas cuando las condiciones son adecuadas. Estos mosquitos pueden vivir y completar su ciclo de vida en recipientes con agua que se encuentran bajo techo o al aire libre.

Busque:

- mosquitos pequeños, negros con rayas blancas.
- mosquitos que están activos y pican durante el día, ¡incluso bajo techo!
- mosquitos inmaduros (larvas y pupas) nadando en aguas estancadas.

Ciclo de vida del mosquito (de huevo a adulto una semana)



Tamaño real




1/4 de pulgada



Cómo mantenerse libres de mosquitos

- Retire o taladre agujeros en la parte inferior de todos los maceteros, platillos, barriles, recipientes y llantas viejas.
- No deje agua en baldes ni enraíce tallos de plantas en agua. Compartir tallos de plantas puede propagar los huevos de los mosquitos.
- Cubra los botes de basura, juguetes y contenedores de reciclaje, y conserve los artículos innecesarios fuera de la lluvia.
- Asegúrese de que los barriles de lluvia estén sellados adecuadamente, ya que los mosquitos pueden poner miles de huevos en su interior.
- Use repelente de insectos que contenga DEET, Picaridin, IR 3535 o aceite de eucalipto de limón.



Reporte los mosquitos color blanco y negro que pican durante el día. 562-944-9656 o www.ReportMosquitoes.org



南加州的新蚊子

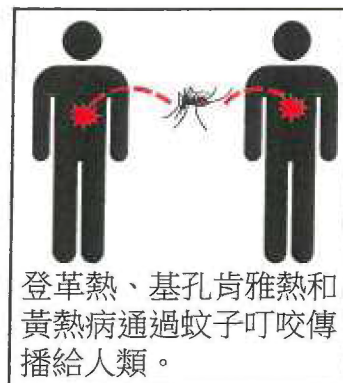
全球旅行和國際貿易為蚊子入侵打開了大門。在南加州安家的三種新蚊子為亞洲虎蚊（白紋伊蚊）、黃熱病蚊（埃及伊蚊）和澳大利亞庭院蚊（notoscriptus伊蚊）。這些蚊子非常適應城市環境。一旦引入，它們就可以在我們的社區大量繁殖。儘管大洛杉磯縣病媒控制區正努力消滅這些入侵昆蟲，但我們無法單獨做到這一點。

我們需要您的幫助

為什麼這很重要？

如果您在南加州居住或工作，您就面臨被這些黑白色晝間叮咬蚊子攻擊的風險。

亞洲虎斑蚊和黃熱病蚊可以傳播使人患病的登革熱、基孔肯雅和黃熱病病毒。基孔肯雅和登革熱疫情正在美洲擴大，加州正在面臨越來越大的威脅。澳大利亞庭院蚊可以傳播腦炎病毒和犬心絲蟲，後者給我們的寵物增加了健康風險。受感染的遊客可以將這些病毒帶入加州，並可能導致局部爆發。



登革熱、基孔肯雅熱和黃熱病通過蚊子叮咬傳播給人類。

有什麼症狀？

» 登革熱（“斷骨熱”）

- 嚴重頭痛/眼睛痛
- 嚴重的肌肉/關節疼痛
- 高燒

» 黃熱病

- 噁心和嘔吐
- 發燒
- 可惡化為黃疸、內出血及休克

» 基孔肯雅 (Chik-un-GOON-ya)

- 使人罹患關節/肌肉疼痛（可以持續很多個月）
- 發燒



澳大利亞庭院蚊

圖片來源：Jared Dever, OCVCD

🔍 如何在您的庭院周圍和家裡或辦公室裡找到這些蚊子

無論是在室內還是在室外，這些蚊子都可以生存並完成其生命週期。任何盛水容器的浮水線處都可以產卵（如花瓶、植物盆、桶、廢舊輪胎，甚至是像竹子或鳳梨樹這樣的存水植物）。卵可以存活多年，當條件合適時，就會孵化成幼蟲。

尋找：

- 有白色條紋的黑色小蚊子。
- 白天蚊子活躍且叮咬 - 甚至在室內！
- 幼蚊（幼蟲和蛹）在積水中游泳。

實際尺寸



蚊子生命週期（從卵到成蟲只要一周時間）



如何防止蚊蟲滋生

- 搬走所有植物盆、盤、桶、箱和舊輪胎，或在其底部鑽孔。
- 不要在桶中存水，或在容器水中插枝育苗。與他人分享植物育苗可以傳播蚊卵。
- 蓋上垃圾桶、玩具和回收箱，不要讓不必要的物品淋雨。
- 確保雨水桶完全密封，因為蚊子可以在其中產下成千上萬只卵。
- 使用含DEET、Picaridin、IR 3535 或檸檬桉油的驅蟲藥。



報告黑白色晝間叮咬的蚊子

562-944-9656 或 www.ReportMosquitoes.org

**SOUTHERN CALIFORNIA'S NEWEST THREATS
WILL CHANGE THE WAY YOU LIVE.**

**LAS MÁS RECIENTES AMENAZAS DEL SUR DE CALIFORNIA
CAMBIARÁN LA FORMA EN QUE USTED VIVE.**

南加州的最新入侵蚊種的威脅將改變您的生活方式。

**ARE YOU PREPARED?
¿ESTÁ PREPARADO?
您準備好了嗎?**

**For FREE assistance or to report mosquito problems please
contact us at (562) 944-9656 or www.ReportMosquitoes.org**

**Para obtener asistencia GRATUITA o para reportar problemas de mosquitos,
comuníquese con nosotros al (562) 944-9656 o en www.ReportMosquitoes.org**

要想獲得免費幫助或報告蚊患問題，請致電 (562) 944-9656 或訪
問 www.ReportMosquitoes.org 聯繫我們。



Greater Los Angeles County Vector Control District

We are dedicated to effective and responsive vector control by monitoring diseases and mosquito populations where we find them. But we can't do this alone. **We need your help.**

Nos dedicamos a un control de vector eficaz y reactivo, vigilado las enfermedades y las poblaciones de mosquitos donde se encuentren. Pero no podemos hacerlo solos. **Necesitamos su ayuda.**

我們通過監測發現蚊子的滋生和疾病的傳播，致力於進行有效且負責的病媒控制。但是，我們不能單獨做到這一點。我們需要您的幫助。

District Headquarters

(562) 944-9656
12545 Florence Avenue
Santa Fe Springs, CA 90670

Sylmar Branch

(818) 364-9589
16320 Foothill Blvd.
Sylmar, CA 91342

...ing in parts of Asia, Eastern Europe, Middle East, it was first detected in the New York City. The disease spread to other countries, and was reported in humans, domestic chickens, wild birds, and other

California in 2003. By the end of 2011, over 3,100 people and caused over 100 deaths. WNV is a potentially deadly disease that can be fatal. Proper protective measures can reduce your risk of infection.

How do people and animals get WNV?

WNV is transmitted to people and animals by mosquitoes. Certain species of mosquitoes are the primary vectors of the virus, and only a small percentage of mosquitoes are actually infected. A mosquito must be infected by feeding on a wild bird that has the virus. The mosquito transmits WNV in its blood when it bites another person or animal.

Humans are "accidental hosts" of WNV. Mosquitoes do not transmit the disease to mosquitoes, but they can transmit it to animals. The virus is most prevalent from late summer to early fall when mosquitoes are most abundant.

West Nile virus can be transmitted through blood transfusions, organ transplants, from mothers to infants during breastfeeding. Consult a physician for more information.

Which animals can get West Nile virus?

Any mosquito can bite any animal, but not all animals will get sick. The disease affects birds most often, but it can also affect other animals. Dogs and cats can get sick if infected with WNV.

Animals acquire the virus from wild birds. Although many animals infected with WNV do not appear sick, WNV does cause serious illness in some birds. The most severe cases occur in birds (including crows, jays, ravens and magpies). The most commonly reported dead bird is the American crow.

Horses are susceptible to WNV. The disease is not specific to a particular age of horse. Clinical signs of disease consist of neurological abnormalities similar to those caused by Eastern equine encephalitis (EEE) and Western equine encephalitis (WEE). WNV is fatal approximately 30% of the time. A WNV vaccine is available for horses, but it is not recommended.

Symptoms may include fever, headache, and body aches, nausea, a skin rash on the trunk of the body, and/or swollen lymph nodes. These symptoms can last for several weeks to months. In severe cases, WNV neurological symptoms may occur as a result of encephalitis (inflammation of the brain), meningitis (inflammation of the membrane surrounding the brain), and meningoencephalitis (inflammation of both the brain and the membrane). Severe symptoms may include high fever, headache, neck stiffness, disorientation, coma, tremors, paralysis, and death. Neurological damage can be permanent. The elderly and those with weakened immune systems are at greatest risk of infection.

The time between the mosquito bite and the onset of illness (the incubation period) ranges from 5 to 15 days in humans. It is estimated that 1 in 150 people who are infected with WNV will require hospitalization.

For More Information:

- For WNV in California: www.westnile.ca.gov
- For CDC Information: www.cdc.gov/ncidod/dvbid/westnile/
- For Wildlife Information: www.nwhc.usgs.gov/disease_information/west_nile_virus/
- For WNV in Horses: CDFA Animal Health Care Branch (916) 500-5002
www.cdca.ca.gov/ahfss/animal_health/horses_equine_health.html
- To Report Dead Birds: 877-WNV-BIRD (968-2473)

What is your vector control district doing to prevent West Nile virus transmission?

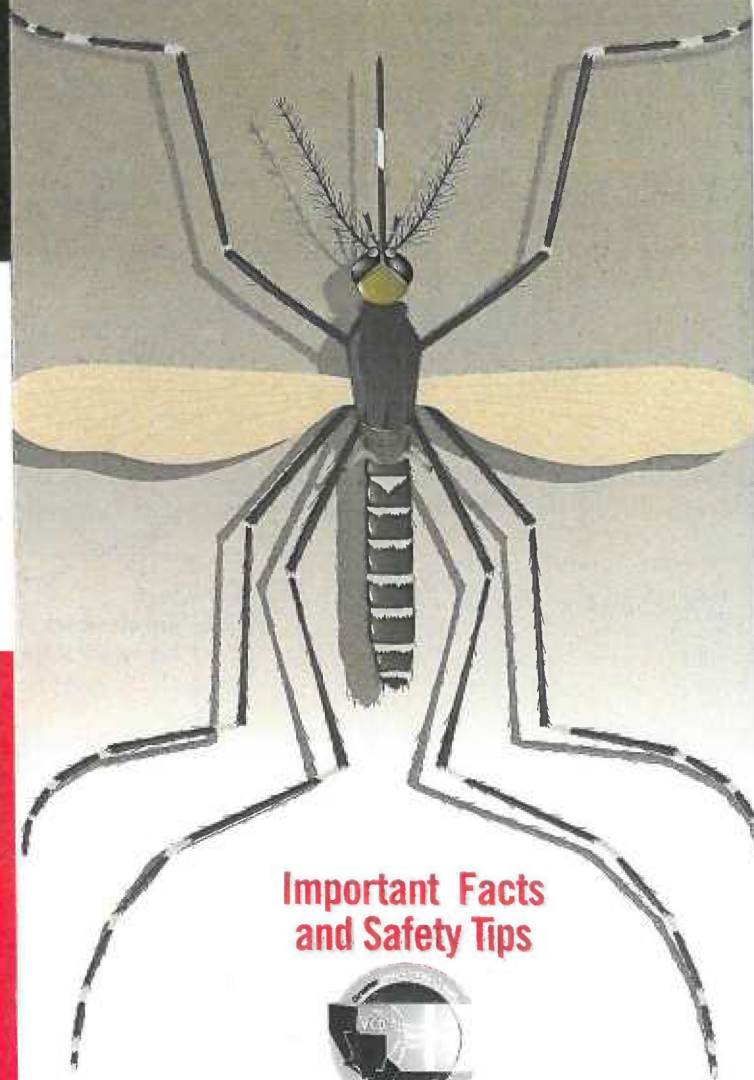
West Nile virus is endemic to California. Reducing the mosquito population, however, may decrease the risk of WNV transmission and infection.

Mosquito and vector control districts routinely survey for vector-borne diseases such as West Nile virus, St. Louis encephalitis and Western equine encephalitis. Adult mosquitoes are routinely trapped and tested for these viruses. Sentinel chicken flocks are strategically placed and tested twice per month for infection. Wild bird surveillance provides an opportunity to test important reservoir hosts for infections with WNV. Technicians regularly check for sites where mosquitoes may breed and eliminate or control them as necessary. Districts provide free home and yard inspections for mosquito sources, and provide mosquitofish to residents for their ponds, water gardens and watering troughs.

Vector control agencies work year-round to ensure your family's safety against mosquitoes and their diseases.

West Nile Virus

Protect yourself and your family



Important Facts and Safety Tips



Greater LA County Vector Control District

12545 Florence Ave.
Santa Fe Springs, CA 90670
Tel: (562)944-9656

16320 Foothill Blvd.
Sylmar, CA 91342
Tel: (818)364-9589

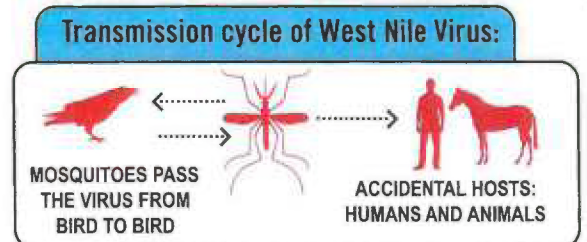
www.glacvcd.org

How can I protect myself and my family from West Nile Virus?



To decrease exposure to mosquitoes:

- > Avoid outdoor activities between dusk and dawn during the mosquito season (May to October). This is particularly important for the elderly.
- > Wear loose fitting long pants and long sleeve shirts when outdoors.
- > Use mosquito repellents containing approved active ingredients such as DEET. Be sure to read and follow the manufacturer's directions for use.



Make a Contribution

The Foundation relies on funds from donors and grants to operate and provide this important educational opportunity to children in the Greater Los Angeles area. Many students participating in the programs come from disadvantaged socio-economic backgrounds, and the opportunity to bring an interactive science program to their schools is highly rewarding. A donation from you or your organization is tax-deductible.

For more information on how to make a donation and a difference in your community, contact the Director of Community Affairs:

Truc Dever

Phone: (562) 944-9656 x510

Email: tdever@glacvcd.org

More About the Programs

To learn more about the Foundation's interactive science programs and how to bring them to your school or community, contact the Education Program Coordinator:

LeShawn Simplis

Phone: (562) 944-9656 x513

Email: lsimplis@glacvcd.org



Mission Statement

To better reach and educate elementary school students and the general public on vector related issues as cost-effectively and creatively as possible, and to encourage citizen participation in mosquito and vector control while enhancing the visibility of the Greater Los Angeles County Vector Control District.



The Greater Los Angeles Mosquito and Vector Control Public Health and Educational Foundation



Bringing science education to your community

About the Foundation

The Foundation is a nonprofit, 501(c)(3) organization based in Santa Fe Springs, California that was founded in March 2001 to advance the Greater Los Angeles County Vector Control District's education program.

Mission

The Foundation exists to further the efforts of the District's educational science programs. These no-cost, interactive programs are dedicated to educating thousands of students, many of them disenfranchised and underrepresented, throughout Greater Los Angeles County about vectors and vector-borne diseases.

In addition to learning about vectors, the Foundation believes the programs will empower students to learn by reading and working in groups to solve scientific problems in their environments. Such education may also create interest in students to pursue future scientific careers in the fields of entomology or biology.



Communities benefit from students learning how to eliminate mosquito breeding sources, thus reducing the chance of vector-borne diseases occurring in their neighborhoods.

The Foundation offers a variety of FREE educational programs:

The VecMobile Program (5th Grade)

This is a mobile 35-foot-long science lab with interactive computer lessons and live specimens where students participate in hands-on science projects.

The Vector Inspector Academy (4th-6th Grade)

Students experience classroom instruction covering mosquito anatomy, disease transmission and mosquito control.

PowerPoint Assemblies (4th-8th Grade)

District staff discuss topics related to vectors and disease transmission utilizing PowerPoint presentations.

District Field Trip Program (5th Grade-Adult)

GLACVCD biologists and technicians guide attendees through interactive activities and demonstrations.



Spotlight on the VecMobile:

In April 2001, the Foundation received an \$80,000 "in-kind" donation of a 35-foot recreational vehicle which was custom designed and retrofitted into a mobile, science-education laboratory. The VecMobile, also known as the Mobile Education Unit (MEU), is the first of its kind in the nation for vector education and community outreach, reaching thousands of inner-city youth in need of interactive science programs.

The VECMobile teaches fifth-grade elementary school students about vectors and vector-borne diseases. This unique 35 foot traveling RV classroom makes science come alive for children and is the flagship program of the Foundation.

