



SAFETY ALERT – 001/23 - JANUARY 2023

PUBLIC HEALTH ADVICE REGARDING INCREASED MOSQUITO-BORNE DISEASE RISK

Key Information

Due to recent flooding, all Victorians should take measures to reduce their risk of mosquito bites this mosquito season. Parts of Victoria are at comparably higher risk from Murray Valley encephalitis virus and/or Japanese encephalitis virus due to environmental factors and weather conditions.

Some schools within CES Ltd are considered to be in very high-risk and high-risk areas (please see Appendix 1).

This Safety Alert contains key information to protect against mosquito bites and subsequent mosquito-borne disease, including priority actions for very-high risk and high-risk areas.

Advice for Schools and Early Childhood Education and Care Centres

There is an increased risk of mosquito-borne diseases in Victoria this mosquito season, due to the recent flooding events in northern Victoria and ongoing environmental conditions that support mosquito breeding. Mosquito-borne diseases that can occur in Victoria include *Japanese encephalitis (JE)* and *Murray Valley encephalitis (MVE)*. JE and MVE are rare but potentially serious infections of the brain that can cause neurological complications and death.

People who spend time outdoors in areas where these viruses have been detected or are believed to be circulating are at increased risk of infection if they are bitten by mosquitoes.

Murray Valley encephalitis virus, and a similar virus called West Nile/Subtype Kunjin virus, have recently been detected in mosquitoes in the Murray Valley from Mildura to Wodonga, and to Bendigo in the south. Multiple detections have occurred around Mildura, and the presence of other risk factors suggests this is a particularly high-risk location for contracting disease.

Under the *Public Health and Wellbeing Regulations 2019*, landowners or occupiers (including schools) are responsible for mosquito management on their property. The Department of Health is currently working with multiple public sector stakeholders to communicate areas of elevated risk where they have been identified. In response to this increased risk and as part of this activity, the department has reviewed and updated its mosquito-borne disease prevention advice to the schools, Early Childhood Education and Care (ECEC) centres and school camps.

Please find this advice below and note that the advice will be updated should the situation change. The advice contains recommendations for settings state-wide, as well as additional recommendations for settings in high-risk

LGAs and very high-risk areas. To support application and implementation of this advice, a list of high-risk LGAs and guidance for identification of very high-risk areas are included in **Attachment 1** below. Additional guidance for chemical treatments of mosquito breeding sites and adult mosquito populations is provided at **Attachment 2**.

Advice for all Victorian Schools and Early Learning Centres

To protect children in schools and ECEC centres from mosquito bites and subsequent mosquito-borne disease, there are several simple things you can include:

- Wear long, loose-fitting clothes if mosquitoes are around.
- Cover up as much as possible.
- Use an effective mosquito repellent on all exposed skin.
- Prevent mosquito breeding around property.
- Prevent mosquitoes from getting inside by using fly screens on windows and doors.
- If mosquitoes are active, consider remaining indoors with fly screens.

Visit the Better Health Channel [Protect yourself from mosquito-borne disease page](#) for more information.

Selection and use of mosquito repellent:

- All use of mosquito repellent must be in accordance with the instructions on the label. Advice may differ between brands and formulations.
- Picaridin and DEET are safe and effective when used according to the instructions on the label.
- Repellent preference can vary. DEET is sticky, can sting eyes and can damage plastics such as polyester clothing. Picaridin does not have this effect and is often better preferred and tolerated.
- DEET can have some localised skin reactions. If a child has an allergy, discontinue use immediately. Try another brand on a small area of skin.
- Higher concentrations do not relate to better effectiveness, only the duration of effect. Consider a lower concentration (i.e., 10%) and reapply regularly as required.
- No repellent is water-resistant.
- Repellent should be applied over sunscreen.
- All the formulations are effective, it comes down to which is easier to comply with. All must be rubbed in to ensure no spots are missed. A combination of formulations can be effective too, for example aerosol or spray for the feet, legs, and possibly the arms (faster to apply) and then a roll-on or spray in areas closer to the face (roll-on for the face or apply spray or aerosol to hands and then apply to the face).
- Long, loose-fitting, light-coloured clothes are ideal to reduce areas needed for insect repellent.
- Sharing repellent, even roll-on is safe. It is recommended that any child with a skin infection use their own product.

Guidance on assessing mosquito activity

Mosquito activity naturally fluctuates across a season and from day-to-day. In general, mosquito biting increases when in overcast conditions or shady areas (mosquitoes do not like direct sunlight), in milder conditions

(mosquitoes become dehydrated on very hot days), in humid conditions (mosquito ability to find someone to bite improves), in light wind (windy conditions impact their ability to find someone to bite and to land), and from about two hours before sunset to dawn. These factors should be considered to help guide use of insect repellent.

Recommendations for high risk LGAs (including very high-risk areas)

The Department of Health recommends that the following advice be provided to all schools, ECEC centres and school camps in high-risk LGAs outlined in **Attachment 1**.

Health promotion messages and behaviour modification advice:

- Children should wear mosquito repellent at school when mosquitoes are observed or when conditions are optimal for mosquito activity.
- If mosquito activity is easily observable, children should stay indoors or alternatively limit time spent outdoors to areas where residual insecticide has been applied.
- Mosquito repellent must be worn if outdoor activities are occurring.
- When mosquito activity is observed, children under 12 months should preferentially be kept indoors or in outdoor areas fully enclosed by insect screens. Where this is not possible, ensure infants are wearing long, loose clothing and use insect nets to cover as much exposed skin as possible. If repellent must be used, consult the label. Products stating “not suitable for under 12 months” or “not to be applied to infants under 12 months of age” should not be used.

Mosquito control/management:

- Residual barrier treatments to control adult mosquitoes should be applied to the relevant areas prior to commencement of Term 1 (or as soon as possible if the school/ECEC centre is currently open), with a re-application recommended in March 2023. See **Attachment 2** below for further guidance.
- Groundskeepers/maintenance staff should take action to remove breeding site habitat on school grounds:
 - remove containers capable of holding water (including rubbish, pots, buckets, containers that may hold water allowing mosquitoes to breed);
 - ensure gutters and drains are not blocked by debris or grass and holding water;
 - ensure septic and water tanks are sealed to ensure no access and egress for mosquitoes.
- School buildings should prevent mosquito access using well maintained insect screens on doors (primarily those held or kept open) and opened windows.

Advice for school camps:

Camp providers should take actions to minimise risk to students and staff by ensuring the following:

- Sleeping quarters must not have gaps that allow mosquito access - doors and any windows that open should have well maintained insect screens, and tents should be inspected for any gaps and netting attached to any windows or doors.
- Stagnant water around camping sites/properties have been removed or treated.

- Enclosed and mosquito-protected areas are available to host activities when mosquito biting is very high e.g., an indoor hall or outdoor area with insect screens (this will not apply to full camping settings without built structures).
- Residual barrier treatments have been applied to the relevant base camp areas to protect children when they are sleeping or undertaking activities around commonly used areas.

In addition, policies and staff management of students should promote and allow compliance with health promotion measures:

- Personal protective measures such as insect repellent application should be actively promoted.
- Provide children with dedicated time for application/re-application of repellent.
- Ensure students pack repellent and long loose clothing anytime they are moving away from the base camp.
- Do not delay taking preventive measures if mosquitoes are noticeably impacting children (e.g., pause activities to apply repellent and put on long loose-fitting clothing).
- Do not delay moving activities indoors or into protected areas if mosquitoes start impacting children.
- Avoid outdoor activities unless mosquito risk has been considered and mitigated (e.g., encourage students to return to their cabins immediately after dinner to apply repellent before returning to post-dinner outdoor activities (or ensure repellent is carried with them)).

Recommendations for “very high-risk” areas within high-risk LGAs

The Department of Health recommends the following for all schools, ECEC centres and school camps in very high-risk areas as described in **Attachment 1**.

- Children are strongly recommended to wear mosquito repellent at all times.
- It is recommended that outdoor school activities do not occur outside the hours of 8am to 6pm.
- Outdoor activity should be reconsidered when mosquito activity is easily observable.

ATTACHMENT 1: Definitions of high-risk and very high-risk areas

Current Victorian situation

The risk of mosquito-borne diseases is currently heightened in Victoria. All Victorians should take measures to reduce their risk of mosquito bites this mosquito season. Parts of Victoria are at comparably higher risk from Murray Valley encephalitis virus and/or Japanese encephalitis virus due to environmental factors and weather conditions. These areas are outlined below.

Risk assessment approach

Risk assessment of LGAs have been developed based on the following information:

- Historic human cases of Murray Valley encephalitis and Japanese encephalitis that provide an indication of the potential transmission of these viruses across Victoria.
- Historic detections of Murray Valley encephalitis virus and Japanese encephalitis virus from past surveillance programs.
- Environmental conditions (flooding and geographic features that are likely to enhance mosquito breeding as flood waters recede).
- Climate (temperatures, rainfall, humidity etc.) that influence mosquito development and breeding).
- Local Government mosquito surveillance (abundance and distribution of mosquitoes across the state); and
- Presence of known vectors of Murray Valley encephalitis virus and Japanese encephalitis virus.

This risk profile is current as of 20 January 2023. It should be noted that risk profiles can change rapidly due to further detections of viruses, human cases of these infections, climatic conditions, identification of additional mosquito vectors and so on.

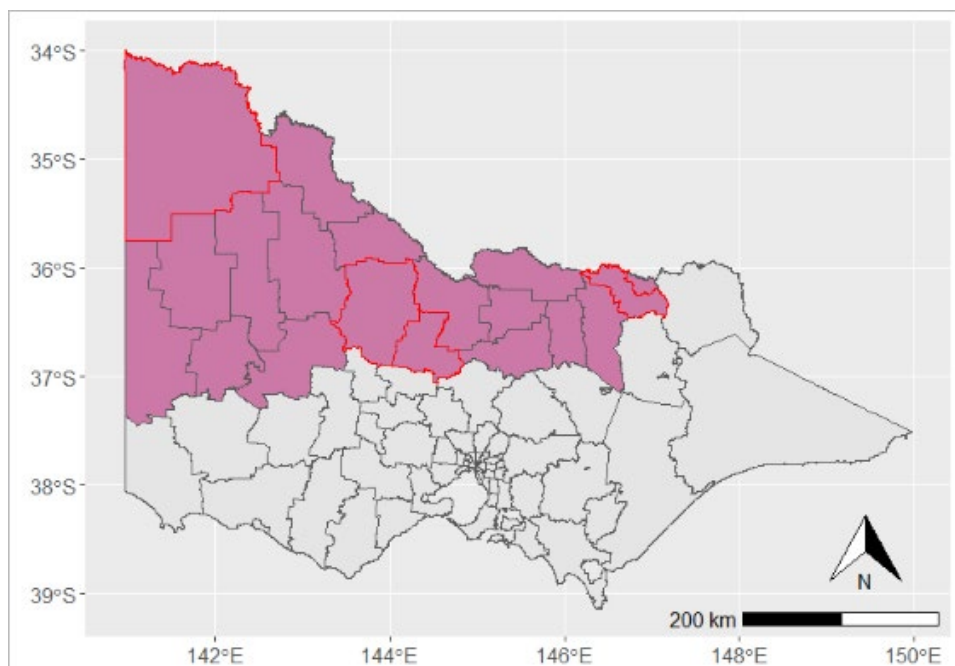
Updates to the risk profile will be communicated as they occur.

High-risk local government areas (LGAs)

Based on the risk assessment described above, the following LGAs are considered at high-risk for human cases of Murray Valley encephalitis and/or Japanese encephalitis:

Benalla, Buloke, Campaspe, Gannawarra, Greater Bendigo, Greater Shepparton, Hindmarsh, Horsham, Indigo, Loddon, Mildura, Moira, Northern Grampians Shire, Strathbogie, Swan Hill, Wangaratta, West Wimmera, Wodonga, and Yarriambiack LGAs (see Figure 1).

Figure 1. Map of high risk LGAs in Victoria as of 20 January 2023 (note: LGAs with recent detection of MVE virus in mosquitoes are highlighted in red).



Very high-risk settings

The risk for mosquito exposure is not uniform across LGAs and may fluctuate depending on dynamic factors such as rainfall, wind and receding flood waters.

Schools, ECEC centres and school camps within a high-risk LGA that meet one or more of the following criteria may be considered “very high-risk”:

- in close proximity of a water body (creek, river, lake), wetlands or flooded bushland; and/or
- impacted by noticeable daytime mosquito activity for most days in a week.

The designation of a “very high-risk” area is to assist with prioritisation of resources and treatments within LGAs. Very high-risk areas should be prioritised for mosquito control/management (residual spraying and breeding site removal) in the first instance, followed by properties within a broader 10km risk profile, followed by other high-risk locations.

ATTACHMENT 2: Guidance for chemical treatments of mosquito breeding sites and adult mosquito populations

Background

These recommendations have been developed using the principles of integrated mosquito management, which is the internationally recognised gold standard that underpins the selection of options to reduce mosquito-borne diseases. Where possible, non-chemical options have been selected, noting that the only way to reduce the number of adult, flying and biting mosquitoes is with chemicals. While this is often not necessary in routine conditions, where there is a need to protect people from high mosquito numbers that are believed to be infected with viruses that can cause mosquito-borne diseases, this is the only mosquito control technique available.

Use of chemicals

Chemicals used in mosquito control are designed to either impact mosquito larvae in the water (larvicides), or the adult, flying biting mosquitoes (adulticides). The latter includes two distinct methods: fogging, and residual barrier spraying.

All products used for mosquito control must be approved for use in Australia by the [Australian Pesticides and Veterinary Medicines Authority \(APVMA\)](#). Specific information on registered products, including the active constituent, and label information, can be accessed through the AVPMA's [Public Chemical Registrations Information System Search \(PubCRIS\)](#) database.

In Victoria, any person who carries on the business of controlling, destroying or repelling pests must be licensed as a pest control operator under the *Public Health and Wellbeing Act 2008*. Licensed pest control operators are qualified to undertake the work prescribed in this attachment.

People without licenses can also undertake this work where pest control is not the primary business they conduct. It is not uncommon for cleaning and building maintenance contractors to undertake secondary pest control activities. In these instances, people should still have sufficient training and knowledge to be able to safely and effectively undertake these tasks, and to meet legal obligations around the use of registered agricultural chemicals.

Control of mosquito breeding sites

Mosquitoes breed in stagnant water. Flying, adult mosquitoes lay eggs, which develop into larvae. In warm and optimal conditions, the time from egg laying to the emergence of the adult form from the water to the air, can be as fast as one week.

Property inspections should be undertaken weekly. Stagnant water should be removed or replaced. Modifications should be made to vessels that collect water to prevent mosquito access (e.g., water tanks).

Where water cannot be removed or replaced (e.g., frog ponds, natural waterways, open drains, or constructed stormwater ponds), and there is evidence of mosquito breeding, larvicides should be used for control. Products containing (S)-methoprene, *Bacillus thuringiensis* or *Bacillus sphaericus* are recommended. These low toxicity products do not impact other species (important for use in a habitat where there are fish and frogs and bird activity). When used according to the instructions on the label, they are safe and effective.

Control of adult mosquitoes

The extreme and extensive rain and flood conditions have created hundreds of thousands of hectares of mosquito breeding habitat across both private and public land that cannot be widely treated. These areas will therefore sometimes be impacted this summer and autumn by substantial adult mosquito activity that has arisen from these breeding sites. The mosquitoes impacting education settings may come from breeding sites either on school grounds, but also from many kilometres away.

Chemical control of adult mosquitoes (adulticiding) augments behavioural modification that already aims to create a barrier between the mosquitoes and people e.g., use of repellent and insect screens.

The Department of Health recommends the application of residual barrier spray to places where mosquitoes rest (e.g., shrubs, bushes, hedges, fences, external building walls, eaves, and perimeter foliage). Particular attention should be paid to treatment of areas that are highly attractive to mosquitoes (e.g., schools may already be aware that disturbance of a particular hedge or shrub causes a large release of flying insects into the air).

These treatments are applied as liquid or mist using handheld or backpack sprayers. The product binds to surfaces and can provide mosquito control for up to 6-8 weeks, reducing the need for frequent chemical control. The Department of Health recommends the use of products containing bifenthrin to maximise length of effect. These types of treatments are larger-scale versions of common home-treatments using ant, cockroach and spider sprays that can be purchased at the supermarket.

Unlike the larvicide products that only impact mosquitoes, all adulticides have some impacts on other insects that land on the treated surfaces. But like with larviciding, when used according to the instructions on the label, they are safe and effective.

The more well-known type of adulticiding is called “fogging”, which is the application of large-scale fly spray using either truck or trailer-mounted units or smaller handheld devices. These treatments typically occur in locations where high numbers of mosquitoes are resting, e.g., bushland. This reduces the local population of mosquitoes for a few days only. Local government may be conducting these activities on public land nearby to school settings to reduce the adult mosquito population to an entire town. This is not recommended as a sustainable, long-term solution at schools or in small, urban areas in general.

Definitions

Acronym	Explanation	Link for further information
Japanese encephalitis (JE)	<p>Japanese encephalitis is caused by the Japanese encephalitis virus (JEV). It is spread through bites from mosquitoes, which become infected through biting infected pigs and waterbirds.</p> <p>JEV is endemic to parts of Asia and the Torres Strait region of Australia. JEV has now also been detected in humans, animals, and mosquitos in mainland Australia.</p>	https://www.health.gov.au/diseases/japanese-encephalitis
Murray Valley encephalitis (MVE)	<p>Murray Valley encephalitis (MVE) is a serious, but rare infection caused by the Murray Valley encephalitis virus. It is spread to humans by infected mosquitoes.</p> <p>There is no effective treatment or vaccine for MVE. The best prevention is to protect against mosquito bites.</p>	https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/murray-valley-encephalitis
Public Health and Wellbeing Regulations 2019	<p>The Public Health and Wellbeing Regulations 2019 support the operation of the Public Health and Wellbeing Act 2008 and provide a framework for businesses, councils, the Department of Health and individuals to protect the health and wellbeing of Victorians.</p> <p>The regulations cover a range of measures to prevent and respond to the spread of infectious diseases and minimise public health risks associated with certain businesses, such as aquatic facilities, tattooists and businesses that perform skin penetration procedures.</p>	https://www.health.vic.gov.au/legislation/public-health-and-wellbeing-regulations-2019
Adulticides	<p>Adulticides are insecticides used by mosquito control programs to kill adult mosquitoes.</p>	https://www.cdc.gov/mosquitoes/mosquito-control/community/adulticides.html

Should you have any questions or concerns regarding the above, please do not hesitate to contact peopleandculture@ceosand.catholic.edu.au OR

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