



Mosquitoes and Cyclones; Managing the Risk of Mosquito-Borne Disease

Extensive breeding habitat for several types of nuisance insects (especially mosquitoes) can result from the heavy rains and associated flooding or tidal storm surges in coastal regions that accompany cyclones. Residents of affected areas may be particularly vulnerable to such insects if their housing and insect screens have been damaged by the cyclone.

Mosquito breeding habitat created by cyclones can include vast areas of temporary ground pools, pools along receding river floodplains, tidal saltmarshes and low lying coastal areas, natural or man-made containers and overflow and pooling of storm and wastewater management infrastructure (e.g. sewage lagoons).

As well as being a nuisance, several species of mosquitoes that may breed in post-cyclonic conditions are also vectors of disease. Mosquito-borne diseases of concern in Western Australia include the non-fatal but potentially debilitating Ross River and Barmah Forest viruses and the much rarer but potentially fatal Murray Valley encephalitis virus.

Whether a population of nuisance mosquitoes becomes a population of disease vectors will depend on prevailing environmental conditions, availability of natural hosts (non-human animals) of the viruses and other factors. Generally, the cyclone season in north-west WA is also the time of year of greatest risk of mosquito-borne disease in the region.

Pre-cyclone preparation (for local governments and emergency management personnel)

A number of things can be done ahead of the cyclone season to prepare for the possibility of mosquito problems. These include:

- Advise communities to store any containers that will hold water after heavy rain under cover, or dispose of them entirely (e.g. old tyres, buckets, pot plant trays, plastic containers, other household junk, etc);
- Purchase appropriate supplies of mosquito control chemicals, personal repellents and bed nets;
- Ensure necessary mosquito control equipment is available and is in reliable working order;
- Prepare information leaflets about the need for and means of avoiding mosquito bites; and
- Identify likely breeding sites and appropriate approaches for control [e.g. physical works to modify or remove the site, chemical control of larval mosquitoes (larviciding), or adult mosquitoes (adulticiding)].

Management measures post-cyclone

Mosquitoes will not be an issue in the first few days after a cyclone, so deal with the more urgent issues during this time. However, in hot conditions some mosquito species will go through their life cycle in as little as 5 days. This does not leave a large window of opportunity for control measures targeting larvae of these species.

Effective mosquito management is best achieved by integrating several different approaches, so it may be necessary for affected local governments and emergency management personnel to collaborate to manage the problem. Approaches that will be necessary post-cyclone include:

- Monitor breeding sites for larvae to determine the timing and priority of sites for chemical control;
- Clean up container breeding habitat (i.e. remove and destroy/bury water-holding rubbish and debris around affected communities);
- Repair or modify damaged infrastructure (e.g. wastewater infrastructure) that may have created mosquito breeding habitat;



- Distribute your information on mosquitoes to affected residents through the most appropriate means (radio, posters, leaflets, etc). This should include information about suspected risk of mosquito-borne disease, likely duration of the problem, what is being done by authorities, how to avoid bites through the use of repellents, bed nets and appropriate clothing;
- Provide bed nets and personal repellent (containing DEET or Picaridin) or establish mosquito-proof accommodation for individuals with no other means of mosquito avoidance (i.e. those with damaged housing, insect screens, etc);
- Chemical control:
 - ◆ Larviciding will help to manage mosquito breeding in small breeding sites in close proximity to residential or temporary accommodation. However, in most post-cyclone situations, breeding sites will be so extensive that it will not be logistically feasible to control the situation with larvicides alone.
 - ◆ Populations of adult mosquitoes dispersing from up to several kilometers away can be reduced using adulticides applied as thermal or ULV fogging, or as residual surface sprays around the perimeter of affected residential areas.

The sheer extent and inaccessibility of mosquito breeding habitat after a cyclone is likely to overwhelm the resources of many individual jurisdictions. Therefore it will be important to seek assistance and additional resources from neighbouring regions and other local and State agencies.

Further Information:

For further information on mosquito control, please contact your local government Environmental Health Officer
or

Environmental Health Directorate
Department of Health
PO Box 8172
PERTH BUSINESS CENTRE WA 6849

Telephone: (08) 9385 6001
Facsimile: (08) 9383 1819

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