

West Nile Virus: The Role of the Pest Management Regulatory Agency of Health Canada

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West Nile Virus (WNV)

- Closely related to St. Louis Encephalitis.
- First isolated in Uganda in 1937.
- First epidemics in Israel (1951-54, 1957).
- Other epidemics outside of North America: France (1962), South Africa (1974), Romania (1996), Russia (1999), and Israel (2000).
- 1999 - first identified in North America, with outbreak in humans centered around New York City. (Infected migratory/imported bird? Infected mosquito?).
- 2001 - in Canada (birds/mosquitoes).
- 2002 - first human cases in Canada (ON, QC, AB), with virus also being found in birds, horses or mosquitoes in NS, QC, ON, MB, and SK.
- 2002 - more than 4,000 people became ill in North America.



Human Test Results: Canada 2002

Province	Number of Probable Human Cases	Number of Confirmed Human Cases	WN virus-related Human Deaths
Quebec	1	16	1
Ontario	83	307*	17+
Alberta	—	2**	—
Total (as of 23 April 2003)	84	325	18

* One case is travel-related

** Both cases are travel-related

+ Three deaths were due to infection with WN virus; four deaths have listed WN virus as a contributory cause of death; four deaths have been attributed to other causes; six may have been associated with infection with WN virus and are being investigated.

West Nile virus Spread: August 1999 to December 2002



Non- Human Test Results: Canada 2002		
	Tested	Confirmed Positive
Birds ⁺	3218	555
Mosquito Pools	10083	305
Horses*		356

⁺ Dead bird sightings: 15518
* Presumptive and Confirmed



West Nile Virus (WNV)

- Human infections mostly asymptomatic, or mild flu-like illness. Rarely causes serious disease (meningitis, encephalitis) and death (all age groups, particularly elderly and immunosuppressed).
- No human vaccine at this time.
- Reservoir hosts = birds.
- Vectors = mosquitoes (mainly *Culex*).



WNV Transmission Cycle

Mosquito vectors
mainly *Culex* species



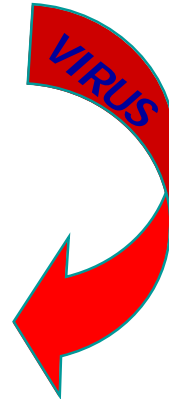
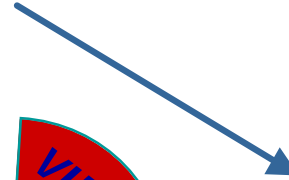
Enzootic amplification



Avian reservoirs



Spill-over
via bridging vectors



Dead - end hosts



Alternate Modes of Transmission of Human Infection due to WN virus: Canada and USA 2002

Route of transmission	Canada		United States	
	Under Investigation	Confirmed	Under Investigation	Confirmed
Blood transmission	3	0	43	14
Tissue/organ transplant	0	0	0	4
Breast milk	0	0	1	1
Transplacental	0	0	0	1
Needle/Scalpel blade	1	0	0	2



Health Canada Activities Related to WNV

- February 2000: West Nile Virus National Steering Committee organized by Health Canada to develop a coordinated approach to respond to West Nile virus.

- Includes representatives from:
 - ◆ Health Canada (including PMRA)
 - ◆ Provincial Ministries of Health, Conservation, Environment and Natural Resources
 - ◆ Department of National Defence
 - ◆ Environment Canada
 - ◆ Canadian Food Inspection Agency
 - ◆ Canadian Cooperative Wildlife Health Centre



Health Canada Activities Related to WNV (cont'd)

- Health Canada, in collaboration with other agencies, continues to work on a coordinated national approach to respond to WNV.
 - ◆ National surveillance
 - ◆ Blood safety
 - ◆ Diagnostic testing
 - ◆ Public education
 - ◆ Pesticides and insect repellents



PMRA's Role

- Pre-market scientific assessment of human and environmental risks and efficacy.
- Re-evaluation of older pest control products.
- Information to the public on both personal protection (including insect repellents) and mosquito control (including mosquito control products).
- Member of the West Nile Virus National Steering Committee.



Information on WNV

1. Registered Pest Control Products
2. Public Education
 - ◆ Source reduction, personal protection
3. Repellents
 - ◆ DEET – Safety Tips for Children
 - ◆ Soybean oil
 - ◆ Methane diol
4. Larvicides (Early season)
 - ◆ Bti
 - ◆ Methoprene
5. Adulticides (Late season)
 - ◆ Malathion
 - ◆ Chlorpyrifos
 - ◆ Propoxur



Communications

- Websites
- Fact Sheets, Call-line, Q&A
- Media Briefings
- MP Briefings
- F/P/T Pesticides
- Health Community, e.g. CCMOH



Decision to Spray

- Decision to spray made at the local or provincial level based on local conditions.
- Only products reviewed and registered by the PMRA can be used.
- Pesticides for large-scale mosquito control can only be applied by people trained and licensed as per provincial requirements.
- Most pesticides require a provincial permit.