

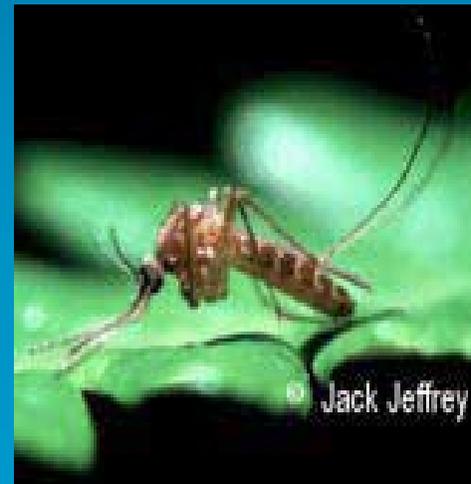
Factors Impacting Effectiveness of Mosquito Abatement Operations, 2002 & 2003

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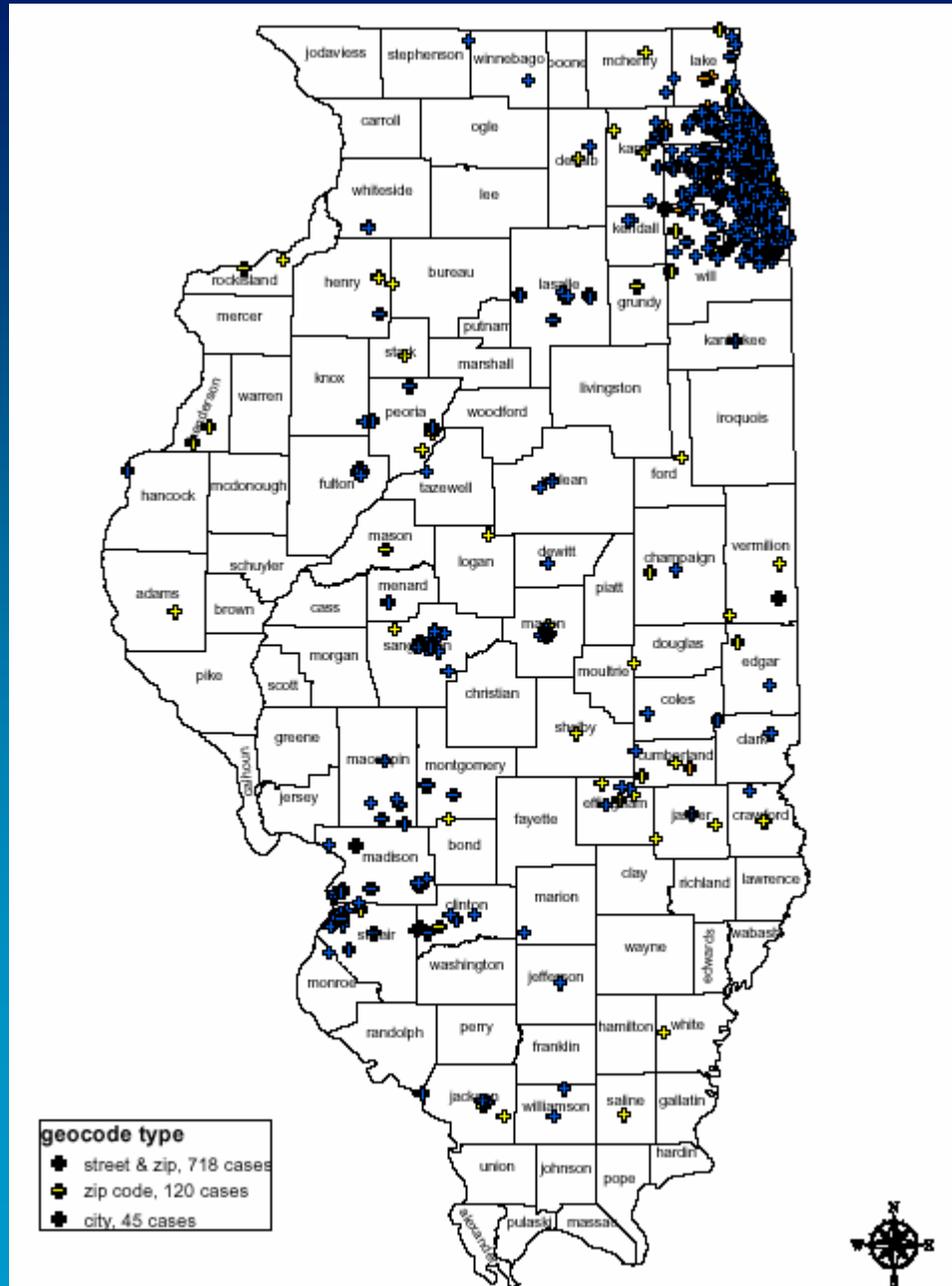
(First, some “Weasel Words”)

The opinions expressed in this presentation are mine alone and are not necessarily the “official” position of the IL Dept of Public Health

Disclaimer

Geographic Location of Residence of WNV Cases in Illinois in 2002

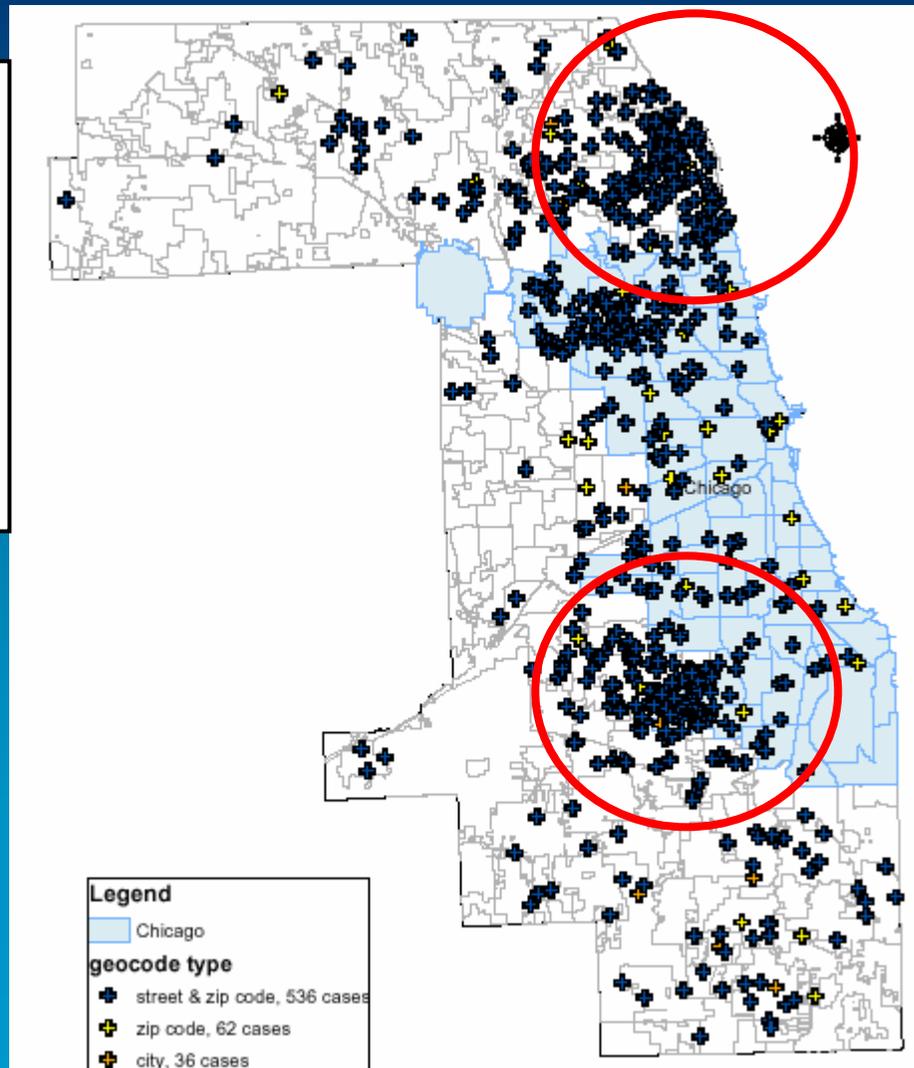
**2002:
884
Cases**



**Note: '03:
53 Cases**

Geographic Location of Residence of Human WNV Cases in Cook County, Illinois in 2002

**2002:
634
Cases**



**Note:
'03:
20 Cases**

“WHY”
Illinois in
2002 ?

why
1

Note: MAD = Mosquito Abatement district

- **Abundant WNV vector mosquitoes (*Culex*)** in urban areas from thousands of residential water impoundments (street catch basins) and water-filled containers (discarded tires and poorly maintained swimming pools).
- **Ideal environmental conditions** for vector mosquitoes during 2002 – a hot summer, which is optimal for production of *Culex* mosquitoes and transmission of WNV.

- Large human populations near forested green belts

why
3

- Prior to the appearance of human WNV cases, many municipalities did little or no mosquito larviciding
- A low use of insect repellent by the public, despite extensive public education efforts by IDPH and local health departments.

It wasn't JUST Illinois in 2002: Don't forget attack rates: in 2002 there was plenty of WNV to go around !

Attack Rates

Cook Co, IL –	11 / 100,000 pop'n
Cuyahoga Co, OH –	15
Nebraska -	10

Funding & Management of Cook Co MADs

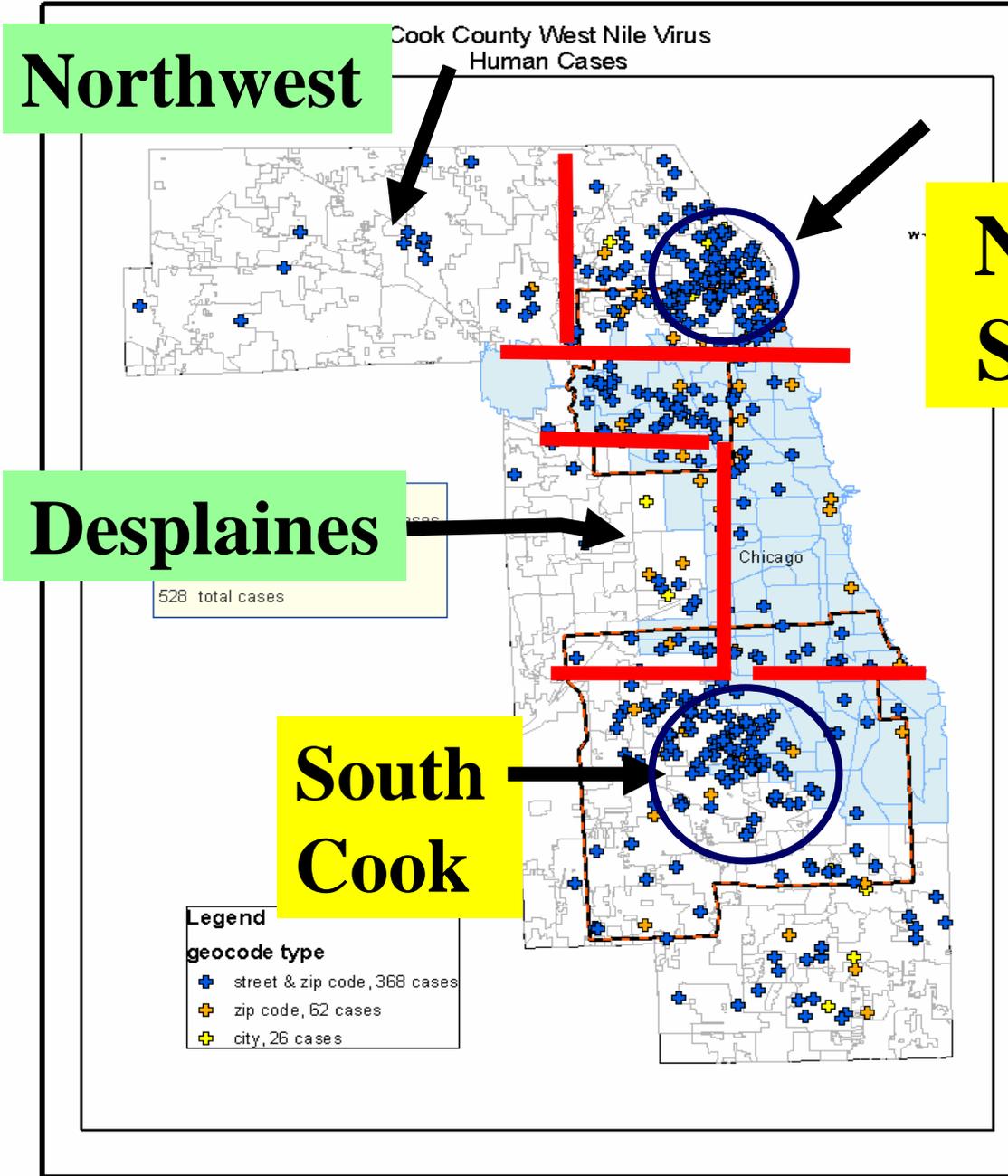
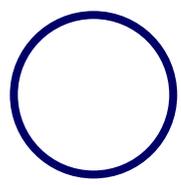
MAD	Population (& Area)	Financial Support	Media Coverage of Management
North Shore	317,000 (79 sq mi)	Good	Some <u>Negative</u> News Media Coverage
Desplaines Valley	390,000 (76 sq mi)	Fair to Good	Generally Positive Media Coverage
Northwest	769,000 (241 sq mi)	Good	Generally Positive Media Coverage
South Cook Co	1,105,000 (340 sq mi)	Fair	Some <u>Negative</u> Media Coverage

Catch Basin Larvicide & Adulticide Effort

MAD	CB Larvicide Effort	Adulticide (area-wide)
North Shore	Restricted to Average	Yes
DP Valley	Very Intense	Yes
Northwest	Intense	Yes
South Cook Co	Restricted	No, spot treatment only

Cook Co. Cases

“Clusters”
of WNV
Cases,
2002



Northwest

North Shore

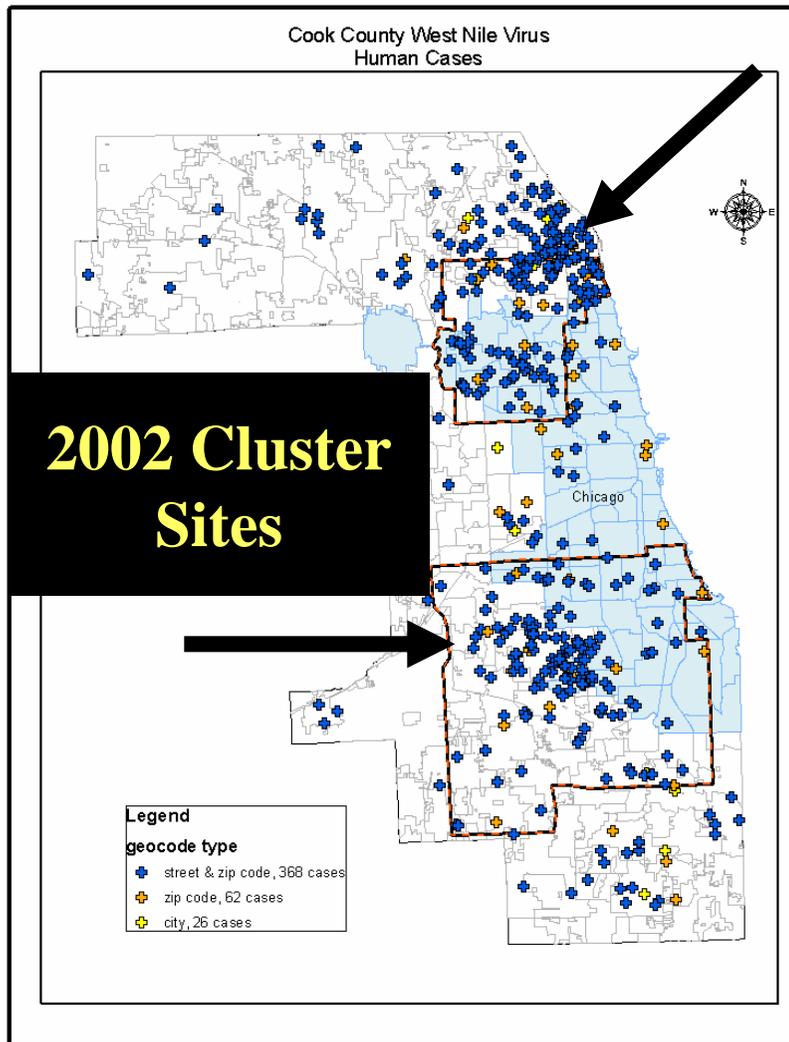
Desplaines

South Cook

Intensity of Catch Basin Treatments vs. 2002 WNV Cases

Note: Other *Culex* sites were also treated.

MAD	Area (& Pop'n)	Catch Basin Treatments	Attack Rate	2002 WNV Cases
North Shore	79 (317,000)	30,000	51	160
DP Valley	76 (390,000)	333,000	4	14
Northwest	241 (769,000)	120,000	5	38
South Cook Co	340 (1,105,000)	26,000	20	216

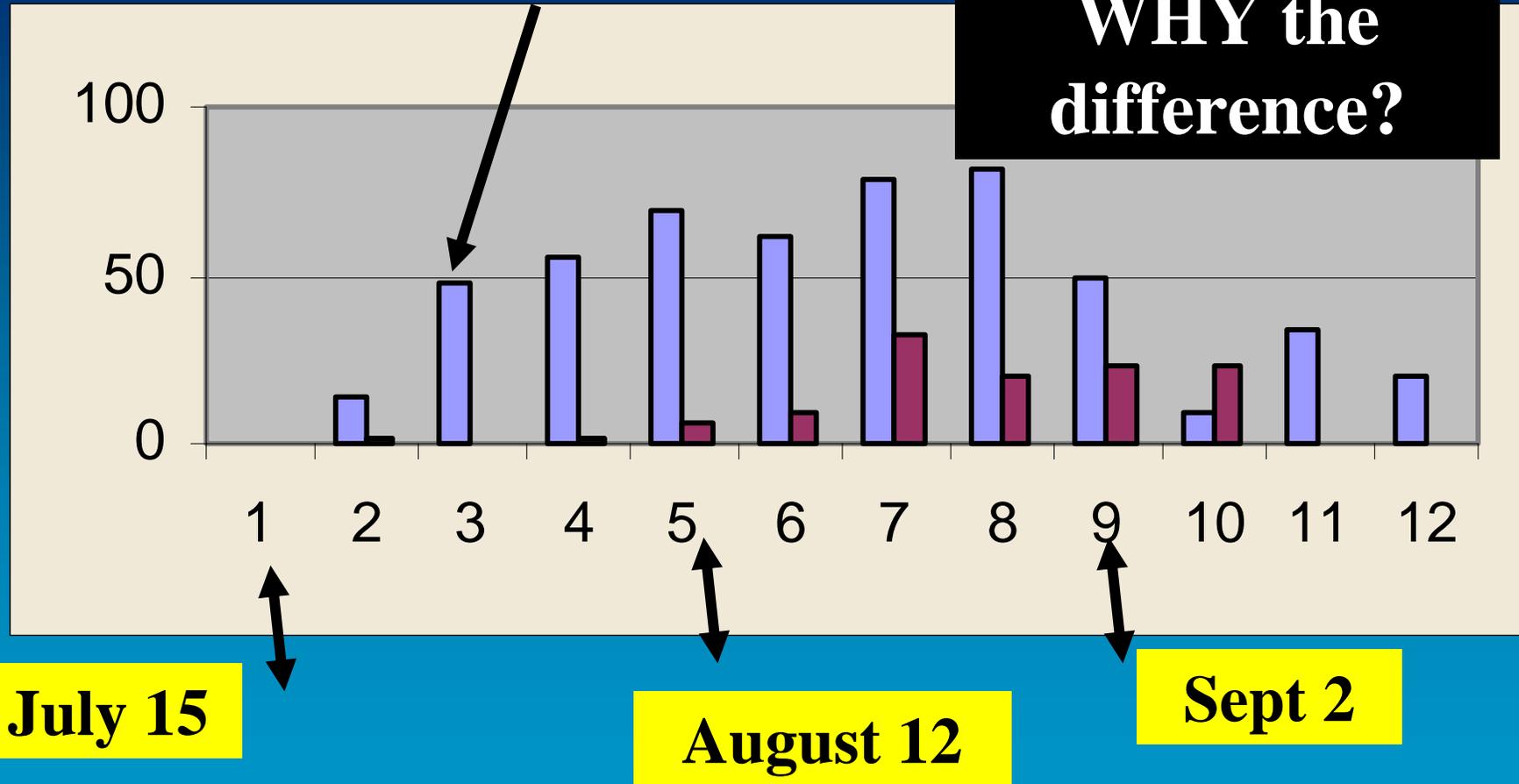


Some evidence of
large numbers of
BACKYARD CBs
in the cluster
areas

* 2002: Cook Co –
Programs with the
most intensive
Larviciding Programs
had proportionately
fewer WNV cases.

Desplaines Valley MAD % Vectest *Culex* WNV Positives, 2002 & 2003

**WHY the
difference?**



***Culex* numbers & rainfall were roughly the same...**

Temperature 2002 vs. 2003: O' Hare Airport

DPV
MAD

April 2002	+2.1	+0.5	April 2003
May	-3.5	-2.5	May
June	+2.7	-2.7	June
July	+3.8	-1.0	July
August	+1.4	+1.9	August
Sept	+3.5	-0.4	Sept
Deviations	+10	-4.2	

Note Temperature
differences

2002 vs. 2003

WNV & SLE Outbreaks: Evidence for the “*Hot Summer*” Hypothesis

- **SLE outbreak in MO & IL – 1932**
- **SLE outbreak in IL – 1975**
- **SLE “activity” in IL - 1995**
- **WNV outbreak in NYC - 1999**
- **WNV outbreak in IL – 2002**
- **WNV outbreak in Cuyahoga Co, OH – 2002**
- **WNV outbreak in Colorado - 2003**

High temperatures may increase the risk of a WNV or SLE outbreak because of rapid maturation of larvae, early abundance of *Culex pipiens*, increased mosquito flight activity, rapid amplification of virus in the *Culex* mosquitoes, etc.

The “Human Behavior” Factor in 2002

“We don’t see any mosquitoes”

- In 2002, Floodwater mosquito populations were low (the public perceives this as “low risk”). Floodwater mosquitoes are much less important than *Culex* for WNV
- Infection rates of *Culex* were VERY high! (Actually the risk was increasing)

Focus on Control of *Culex* Larvae in Catch Basins

There is evidence that the areas with the most intensive (and thorough) treatment of catch basins and other *Culex* sites had fewer cases than other locations



40 - 50% may be breeding *Culex* in residential areas.

In response to the 2002 outbreak, in January 2003 a memo about *Culex* larviciding was sent to 1,400+ Municipal Officials

Lessons Learned - 2002

- **Can we get people to use repellent ???**
- **Importance of “off-road” mosquito production sites in urban areas (Catch basins, particularly those in backyards)**
- **In some communities, there were MANY more of the backyard catch basins than anyone expected**
- **Lack of mosquito control capabilities in many areas**
- **Questions about adequate / stable funding for local agencies**

Postscript

Special “1 Hour” Larvicide training Rule
from IL Dept of Agriculture
(Requested by IDPH & Municipalities to enlist
additional staff for larviciding)

Only SOLID – PREPACKAGED larvicides can be used: currently, only Altosid briquets, Bti briquets, and Vectolex WSP can be used under the rule.
Training must be conducted yearly.

Thank You for your Attention!

The End

Acknowledgements: IDPH field, lab, toxicology, administrative & communications staff. Also, IEPA, IL Natural History Survey, Natural Resources, local health departments, mosquito abatement districts, municipalities, CDC and others.....