

Pesticides and Water Quality:

New Policy Context &
Resulting State-Federal Relationships

Joe Zachmann Minnesota Department of Agriculture
SFIREG Working Committee on
Water Quality & Pesticide Disposal (WQ/PD)

February 26, 2007

TPSA - Reno



What's SFIREG???

- State-FIFRA Issues, Research & Evaluation Group
 - A network of state officials interested in federal/state “co-regulation” of pesticides under FIFRA
 - Established by the Association of American Pesticide Control Officials (AAPCO) under cooperative agreement with EPA

What's SFIREG???

- SFIREG

- A full committee that acts as states' decision body for issues forwarded to EPA
- Receive and provide to all State Lead Agencies (SLAs) reports and information on EPA activities and programs, and vice-versa

What's SFIREG???

- SFIREG

- Two “Working Committees” with Chairs and members separate from full SFIREG

1. Water Quality & Pesticide Disposal Committee
2. Pesticide Operations & Management Committee

- Report to the full SFIREG
- Research and develop specific issues

What's Going on???

Programs

Evolving
Debates About
Pesticides and
WQ impacts

**SFIREG WQ/PD
Activity**

WQ Monitoring:
Local, State,
Federal,
Registrant,
International

Federal
Accountability
of EPA
OPP and OW



Evolving Debates



■ Local

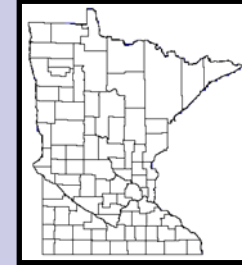
Between a rock and a harsh chemical

Boston Globe, February 4, 2007

re. Glyphosate (Roundup) use in city parks

“[The] codirector of the pesticide action committee said the group will be working to identify other organizations that oppose pesticide use and are especially interested in the effects the chemicals might have on ground water.”

Evolving Debates



■ State

State rejects call to review 3 pesticides

StarTribune, February 1, 2007

re. Citizen's petition for state review of pesticides

“Surveys ... have frequently found the herbicides atrazine and acetochlor in drinking water wells [and] in a very high percentage of groundwater resources throughout the state, and the two herbicides have been found at dangerously high concentrations in the Whitewater River and other surface waters.”

Evolving Debates



■ National Advocacy

National Assessment of Tap Water Quality


December 2005

re. Agricultural chemicals in tap water

*“...water contaminated with 83 agricultural pollutants... [is] served to 201,955,000 people in 41 states. 15% of those people were served water with one or more agricultural contaminants present at levels above non-enforceable, health-based limits. **54 of the agricultural chemicals detected in tap water are unregulated, without a legal, health-based limit in tap water.**”*

[Ed note: approx. 27 of the 54 ag chemicals are current use pesticides]

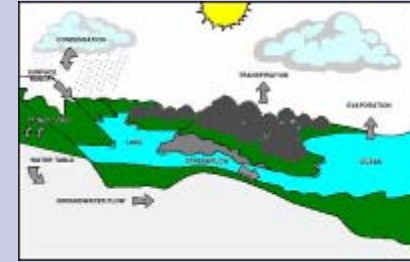




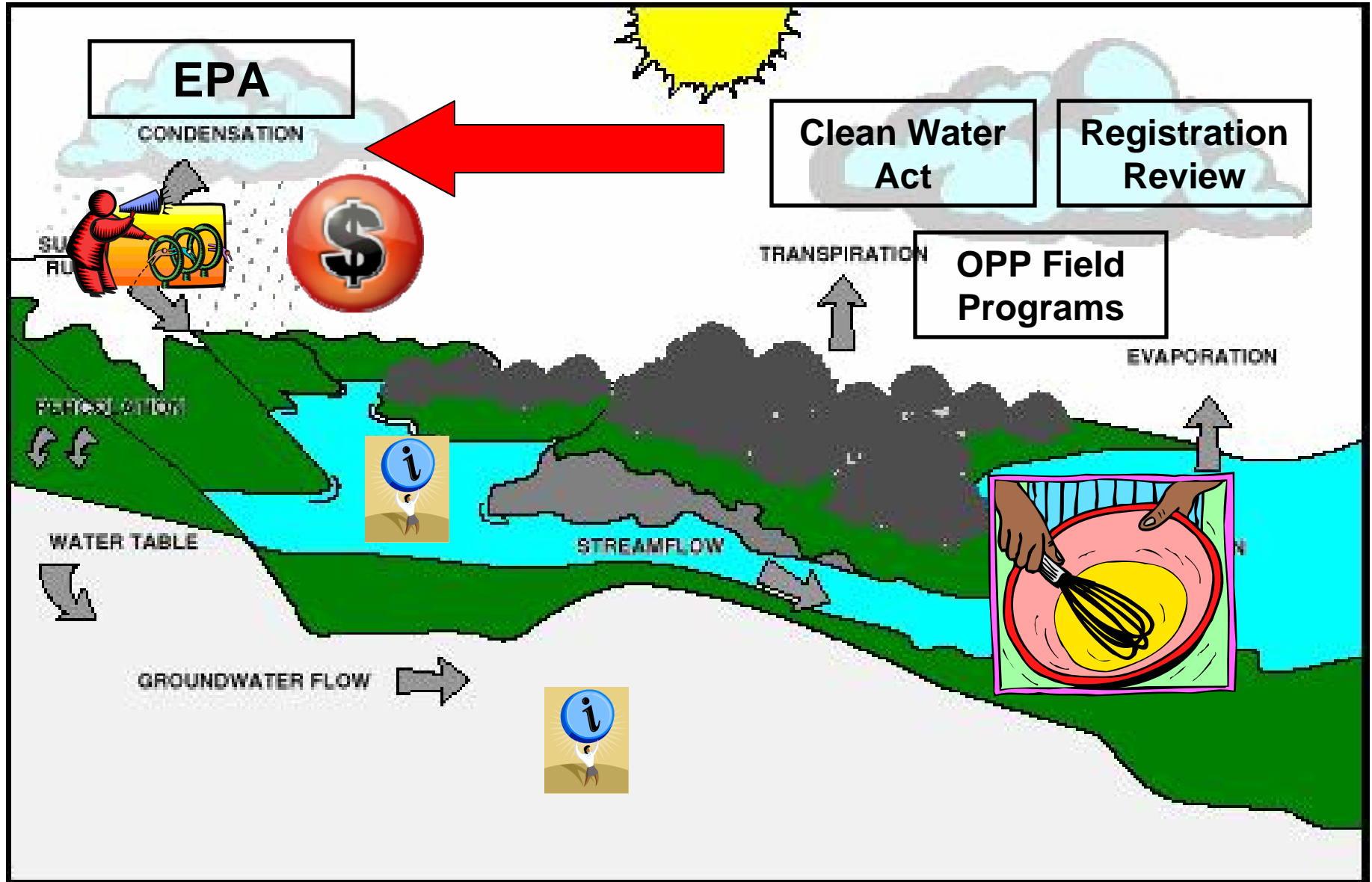
Federal Performance Assessment Rating Tool (PART) May 2005

- Govt. Performance Results Act uses PART scoring process
 - OW and OPP budget penalties (OPP loses \$1 million; OW doesn't gain)
 - Requires establishment of performance goals
 - OPP required to “strengthen...program justifications” and “demonstrate how activities contribute to strategic goals”

Gathering Storm?



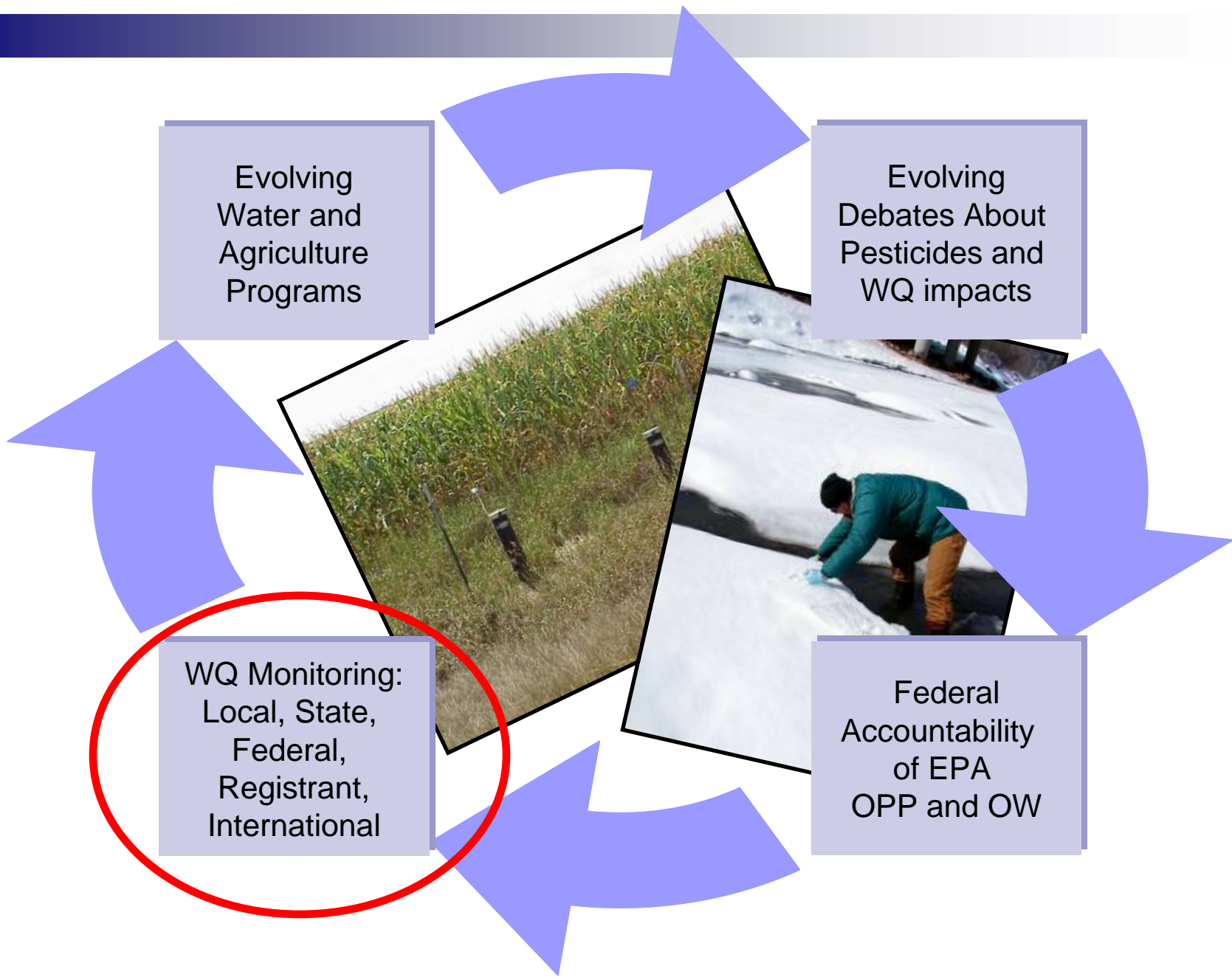
- OMB cites redundancies between OW surface water programs and OPP field implementation program
- EPA involves states in development of performance measures
- OPP: “There’s a role for both programs.”
- OPP’s Grant Guidance requests state data to support EPA performance goals





OPP- OW Renewed Cooperation

- OW & OPP share OMB review stories
- OW & OPP set goals: Reduce number of pesticide-impairments or exceedances through cooperation
- OPP finds ways to increase data sharing with OW
- OPP & OW explore bridging differences in risk assessment for waters
- OPP & OW explore use of registration process and science for state waters assessments



Pesticides in the Nation's Streams and Ground Water, 1992-2001

Robert J. Gilliom, Jack E. Barbash, Charles G. Crawford, Pixie A. Hamilton, Jeffrey D. Martin, Naomi Nakagaki, Lisa H. Nowell, Jonathon C. Scott, Paul E. Stackelberg, Gail P. Thelin, David M. Wolock

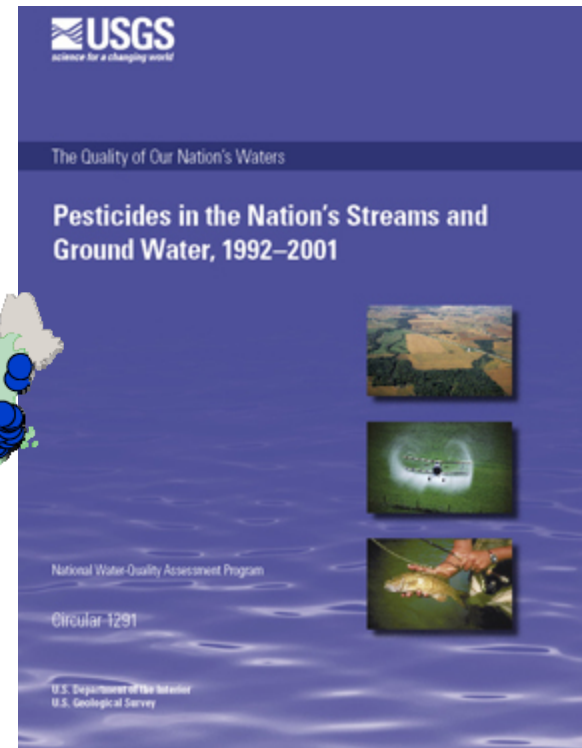
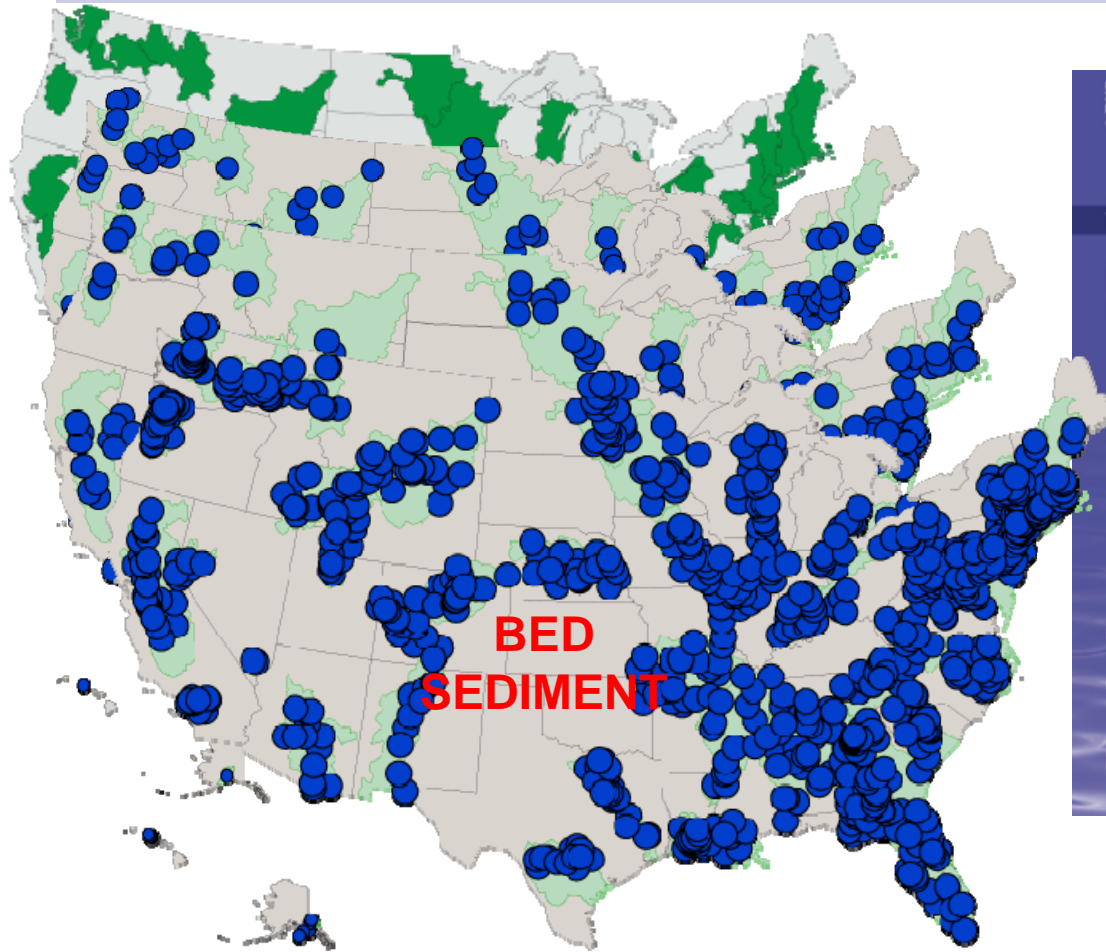
National Water-Quality Assessment Program (NAWQA)

Pesticide National Synthesis Project

U.S. Department of the Interior
U.S. Geological Survey



Study Areas, Streams, Groundwater, Bed Sediment





USGS Compares Pesticide Detections to Benchmarks

- For pesticides included in study only
 - Groundwater –
 - Public Drinking Water standards (Max. Contaminant Levels – MCLs; Lifetime Health Advisories and cancer guidelines)
 - Surface Water –
 - Available Ambient Water Quality Criteria
 - Comprehensive list of readily available OPP registration & reregistration data (i.e., from published REDs, IREDs, TREDs, etc.)
- Many pesticides not included
- Many benchmarks not available

Minnesota Groundwater Data

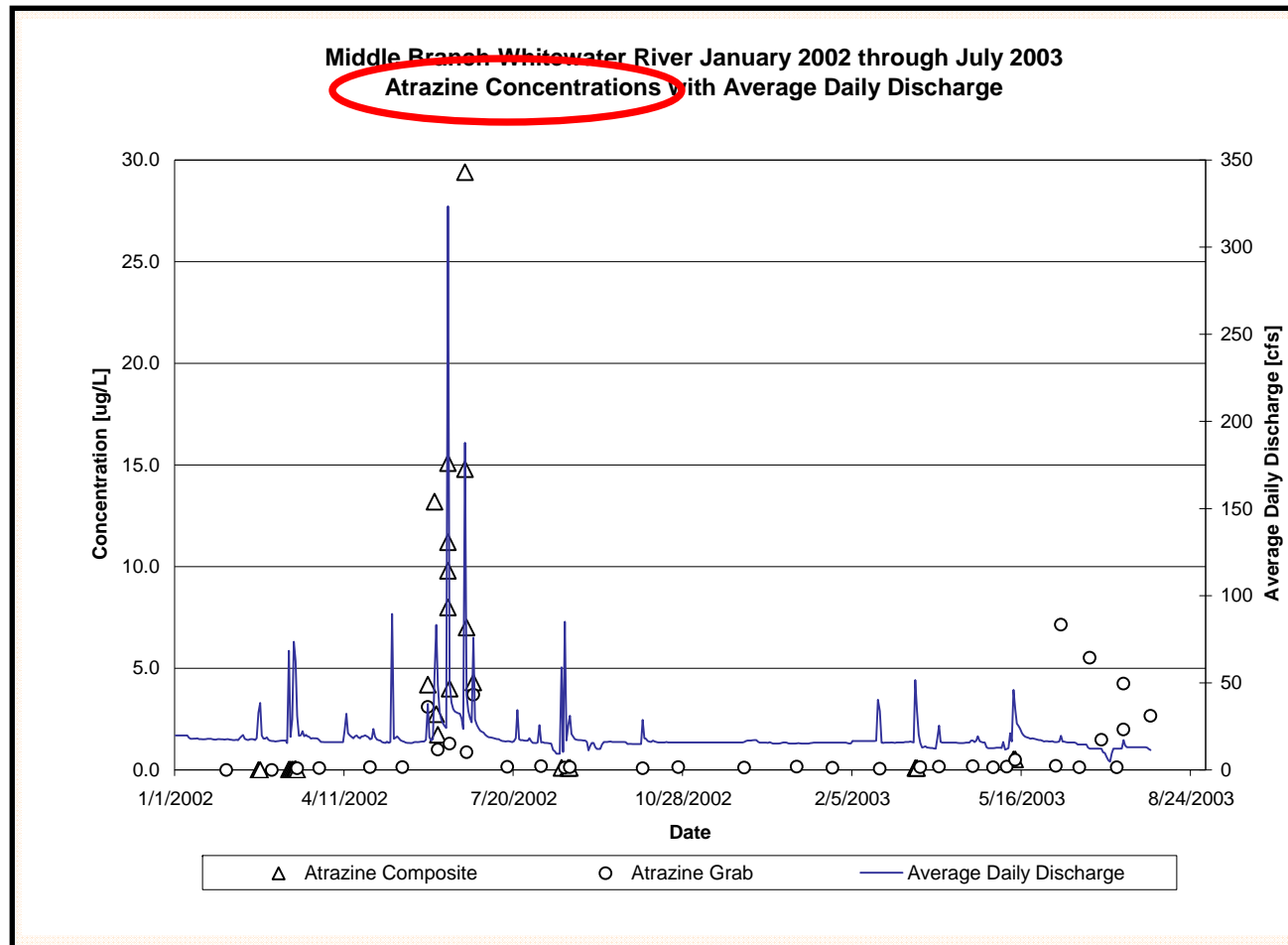
2003: % Detections in 134 Samples, 84 Sites, 10 Counties

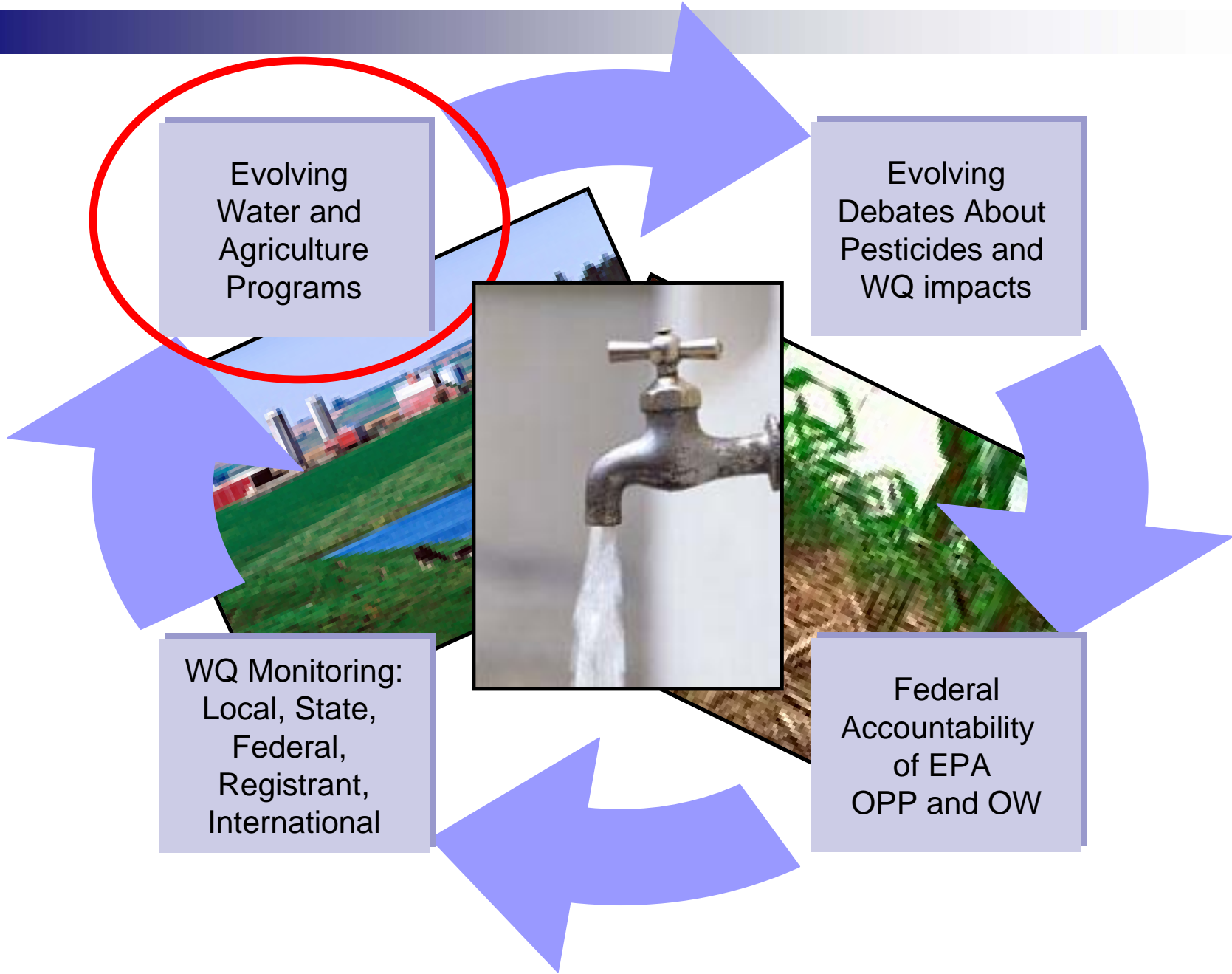


❖ Herbicides of concern: acetochlor, alachlor, atrazine, metribuzin & metolachlor

Minnesota Surface Water Data

- 2002-2003 Whitewater Rvr. SE MN








Water Pressure!

- States under pressure to assess waters, restore impaired waters
- EPA under pressure to achieve goals under PART
- Drinking water programs under pressure to expand pesticide analytes
- USDA under pressure to improve conservation and water quality
- All under pressure to protect against “unreasonable adverse effects on human health & the environment”




EPA Tools to Evaluate Pesticide Detections in Groundwater

- Quantification of Groundwater Risk
 - Safe Drinking Water Act
 - Maximum Contaminant Levels (MCLs)
 - Public supplies – few MCLs for registered a.i.s or degradates
 - Health Advisories (non-regulatory), primarily derived from OPP Registration Data



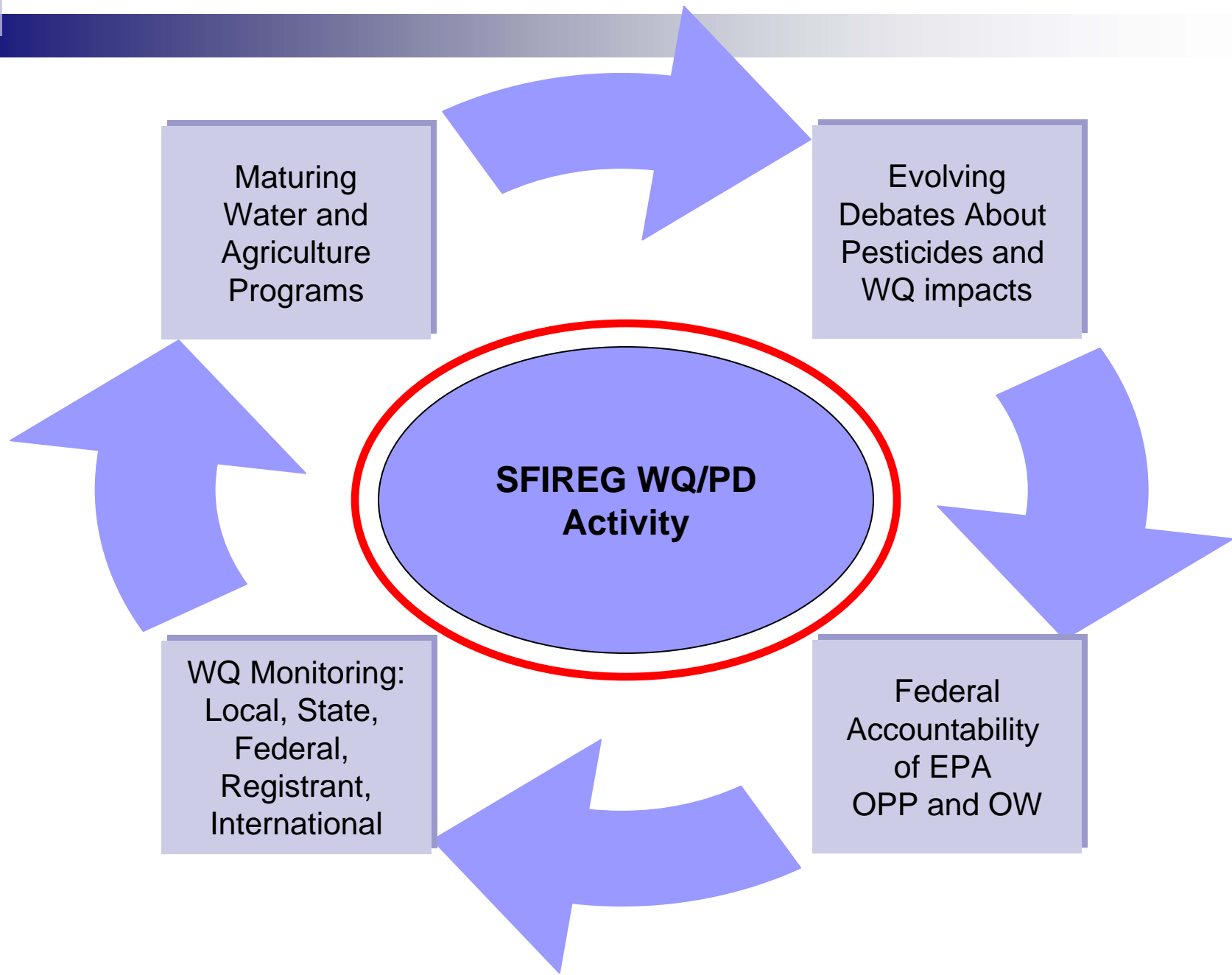
EPA Tools to Evaluate Pesticide Detections in **Surface Water**

- Quantification of Surface Water Risk
 - Clean Water Act
 - Ambient Water Quality Criteria
 - Few for currently registered, common a.i.s or degradates
 - OPP Performance Goals Linked to Select Benchmark Thresholds from Registration Data
 - E.g., Chlorpyrifos, Diazinon



State Tools to Evaluate Pesticide Detections in Ground & Surface Water

- Quantification of Risk
 - State Regulations for Private Wells
 - Default to available MCLs or conduct state-specific rule-making
 - Health Advisories (non-regulatory)
 - The path for most states for most a.i.s and metabolites/degradates
 - Clean Water Act
 - State-specific guidance or rule-making in absence of federal criteria





Exploring common interests

- Program Priorities
 - SFIREG WQ/PD
 - EPA HQ & Regions
 - USGS

EPA 2004 + SFIREG 2006

Surface Water Benchmark Priorities

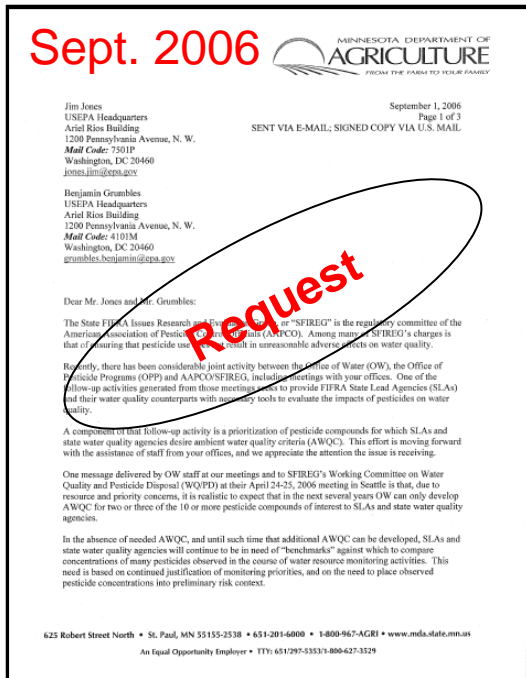
Red = Existing AWQC

Blue = AAPCO/SFIREG Recommendation

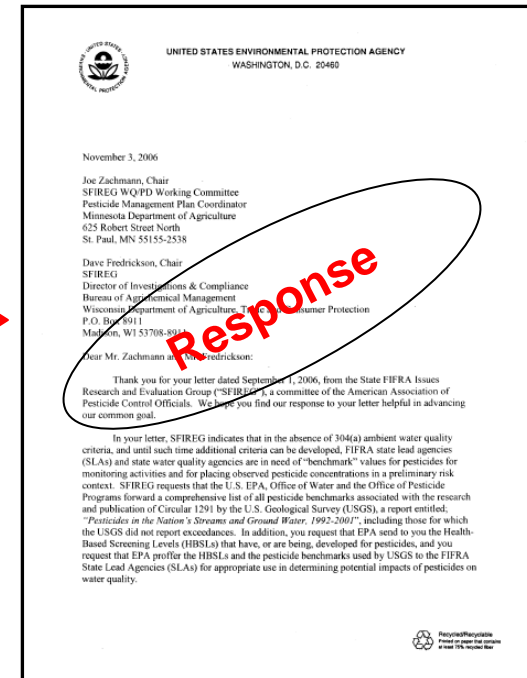
- Acetochlor
- Alachlor
- Aldicarb
- AZM (Guthion)
- Benfluralin
- Carbaryl
- Carbofuran
- Chlordane (banned)
- Chlorthalonil
- Chlorpyrifos
- 2,4-D
- Dachthal
- Diazinon
- Dieldrin (banned)
- Diuron
- Endosulfan
- EPTC
- Fipronil
- Glyphosate
- Hexazinone
- Imidan
- Isoxaflutole
- Lindane (banned)
- Malathion
- Metalochlor +Deg
- Methoprene
- Metam-sodium
- Naled
- Parathion
- Pyrethrins
- Pyrethroids
- Prometon
- Simazine
- Tebuthiuron
- Triazines
- Zinc Pyrithione

WQ/PD Request to OW & OPP

- All benchmarks verified by EPA for USGS report + USGS Health-Based Screening Values for Drinking Water



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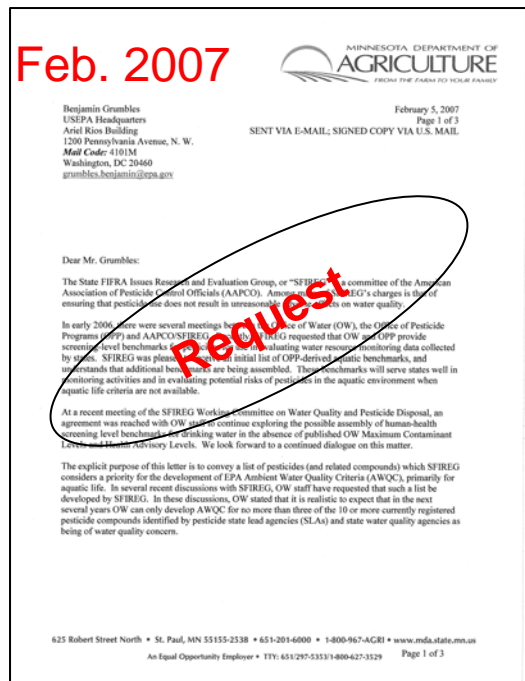


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WQ/PD Request to OW

- Develop surface water criteria for 5 priority pesticides



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Next steps – Surface Water

- Request missing benchmarks to complement WQ/PD priority list
- Fill additional gaps where possible
- Explore utilization of benchmarks for state-level assessments and regulatory purposes



Next steps – Groundwater

- Explore with OW possible pesticide drinking water screening benchmarks in absence of federal standards
- Explore use of OPP registration data for state-level drinking water standards
- Explore OPP-OW (Safe Drinking Water Act) interaction
 - Standards development
 - Unregulated Contaminant Monitoring
 - Registration & WQ Feedback Loops

SFIREG – ASIWPCA Coordination

Association of State & Interstate Water Pollution Control Aministrators

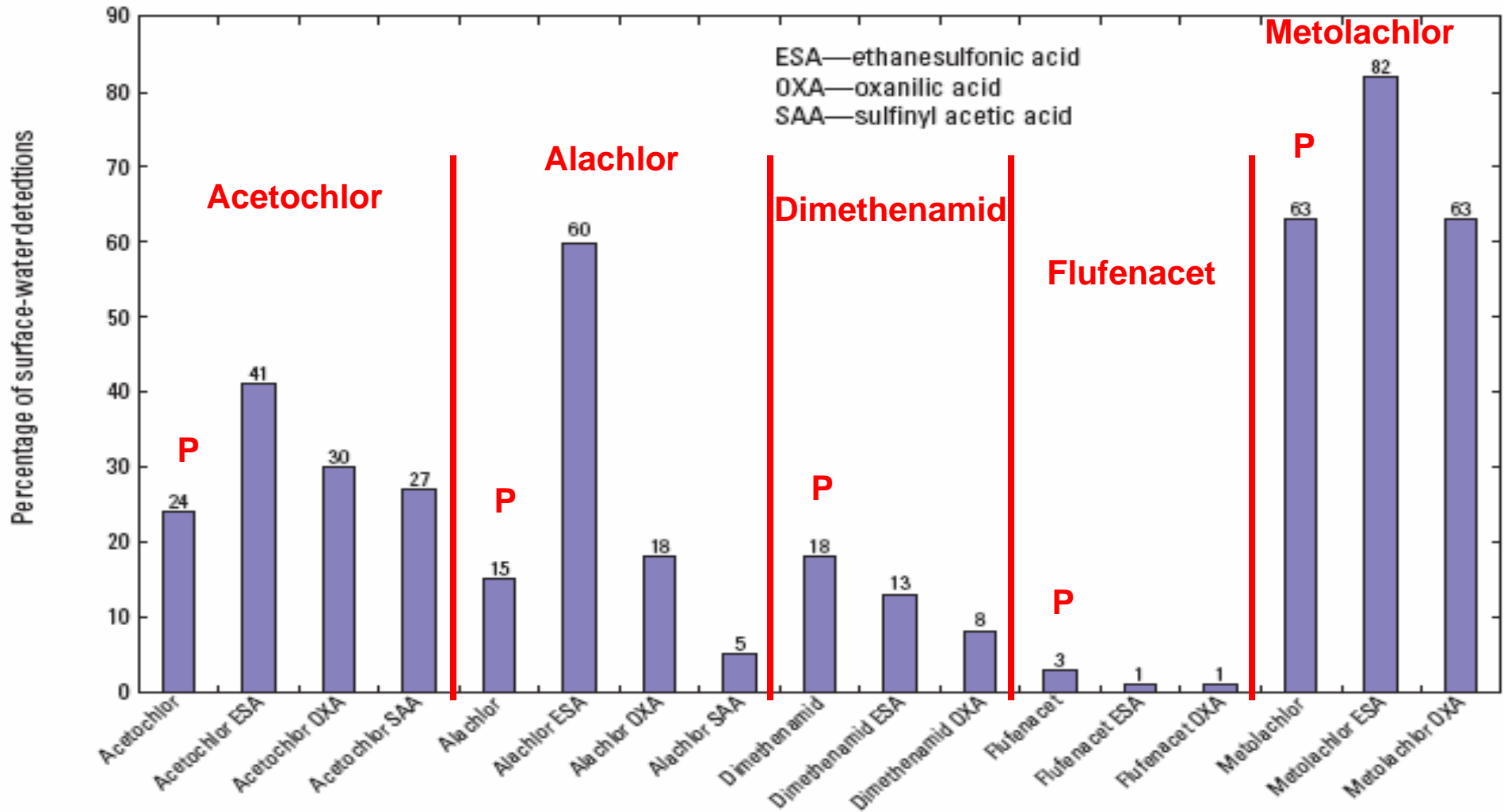
SFIREG WQ/PD



ASIWPCA Monitoring,
Assessment & Standards
Task Force (MAST)

1. PREP courses – participants and presenters
2. MAST conference calls
3. SFIREG meetings
4. EPA Communications / CWA Reporting
5. State monitoring & sampling projects

Degradates: e.g. Surface Water Data



WQ/PD Request for Degradate Data – “Tracking Table”

SFIREG-OPP-OW Pesticide Degradate Tracking Table	
Parent Pesticide	Pesticide Degradate found in GW or SW
Acetochlor	Acetochlor ESA Acetochlor OXA Acetochlor/Metolachlor-2 nd amide Acetochlor/Metolachlor ESA-2 nd amide
Alachlor	Alachlor ESA Alachlor OXA Alachlor-2 nd amide Alachlor deschloro Alachlor ESA 2 nd -amide Alachlor hydroxyl Alachlor SAA
Aldicarb	Aldicarb sulfoxide Aldicarb sulfone
Atrazine	Deethylatrazine Deisopropylatrazine Didealkylatrazine Hydroxyatrazine Deethylhydroxyatrazine Deisopropylhydroxy-atrazine
Carbofuran	3-Hydroxycarbofuran
Chlorpyrifos	Chlorpyrifos oxon 3,5,6-trichloro-2-pyridinol
Cyanazine	Cyanazine amide Cyanazine acid Deethylcyanazine acid Deethylcyanazine amide
Dacthal	Dacthal monoacid
Dimethenamid	Dimethenamid ESA Dimethenamid OXA Dimethenamid deschloro Dimethenamid hydroxyl
Flufenacet	Flufenacet ESA Flufenacet OXA
Glyphosate	AMPA
Metolachlor	Metolachlor ESA Metolachlor OXA Acetochlor/Metolachlor-2 nd amide Acetochlor/Metolachlor ESA-2 nd amide Metolachlor deschloro Metolachlor hydroxy
Propachlor	Propachlor OXA
Simazine	Hydroxysimazine

- 14 a.i.s
- 43 degradates



Human Health Risk Assessment					
Has parent and/or degradate been reviewed by Branch RA Team or RARC?¹	Was major metabolism study conducted on parent?²	Is degradate a major biological metabolite of parent?	Has basic tiered testing been conducted for degradate?³	Has a comparative study been conducted (parent vs. metabolite) for most sensitive toxic endpoint?	State drinking water standards or guidance (if other than presumed toxicity of parent)?

Ambient Water Criteria for Aquatic Life				
Has parent and/or degradate been reviewed by OW for criteria development?¹	Does EC-50¹ value for plant, fish or invertebrate exist for degradate?	Does MATC² value for plant, fish or invertebrate exist for degradate?	Does No Effect value for plant, fish or invertebrate exist for degradate?	State ambient water criteria or guidance for degradate?

Environmental Fate & Transport					
Was degradate evaluated as part of EFED RA?	Is degradate solubility value known?	Is degradate hydrolysis value known?	Are aerobic soil metabolism values known?	Are leaching (aged/unaged) and field dissipation values known?	Are adsorption-desorption, Koc values known?



Objective of Degradate Tracking

- Compile information for degradates detected by SLAs
- Begin with “YES” or “NO” answers to series of questions
- Develop understanding for lack of data and possibility of future data
- Communicate known risk to stakeholders

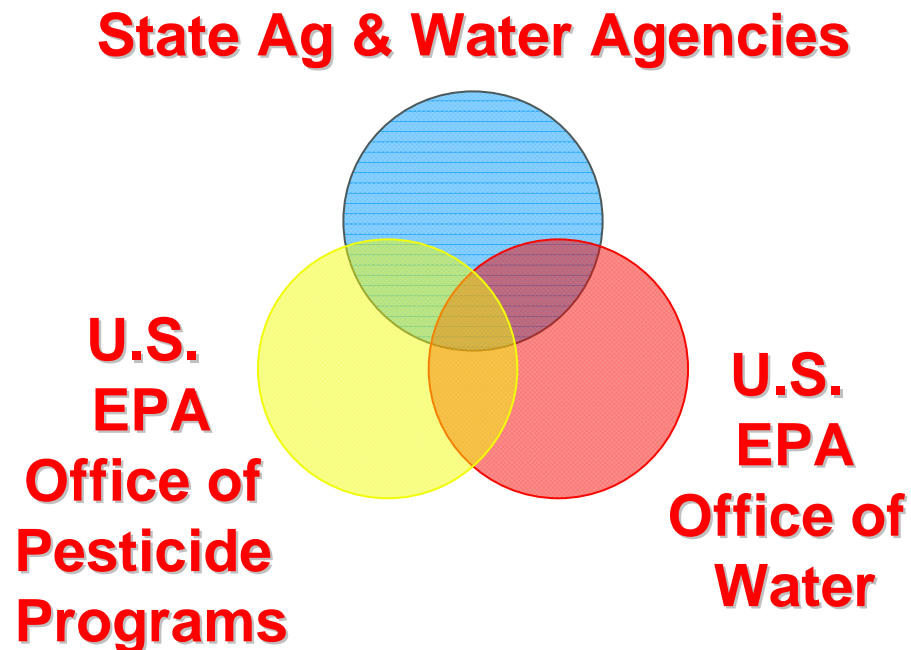


Other Pesticide WQ Challenges

- Method detection/reporting limits
- Health and ecological effects at low concentrations (e.g., endocrine disruption)
- Progress on cumulative risk assessments for compounds sharing mechanisms of toxicity
- Mixtures
- Inerts
- Registration review queue may not match need
- Degradates

All of this activity has lead to...

- New cooperation and relationships between OPP, OW and States





SFIREG WQ/PD Committee

Chair		Joe Zachmann
EPA-Rep		Bruce Wilkinson (Reg. V)
AAPSE		Richard Pope
Region	I	Jeff Comstock (VT)
	II	Roy Meyer (NJ)
	III	Judith Singer (CT)
	IV	Henry Wade (NC)
	V	Judy Carlson (ND)
	VI	Kevin Armbrust (MS)
	VII	Jim Ellerhoff (IA)
	VIII	Amy Bamber (MT)
	IX	Kean Goh (CA)
	X	Kirk Cook (WA)



Questions?

Joe Zachmann

SFIREG WQ/PD

Minnesota Department of Agriculture

651-201-6588

joseph.zachmann@state.mn.us