



Ag-Forestry Leadership
September 15, 2004
Richland, WA

Pesticide Issues Facing Agriculture & Forestry



Allan S. Felsot
Washington State University
Department of Entomology
Food & Environmental Quality Lab



Common Perception: Agriculture Pollutes Water

- Sedimentation
 - Loss of navigable water
 - Habitat loss
- Livestock
 - Pathogenic bacteria
 - Antibiotics
- Nutrients
 - Algal blooms
 - Dead Zones
- Pesticides

Pesticides as a Public Menace

- Pesticide contamination of water is widespread
- Pesticides responsible for ecological problems
- Pesticides responsible for human health problems



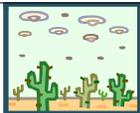
Fact or Fiction?

- Pesticides in water supplies of the Midwest pose a cancer risk
- Pesticides causing widespread frog deformities and decline in populations
- Pesticides harming endangered salmon species
- Pesticides harming farm workers



Common Misperceptions

- Mere detection of a pesticide residue is equal to a hazard
- Exposure to pesticide residues is equal to a hazard
- Desire to manage (for ex., court-mandated buffer zones) means there is a hazard
- EPA registers pesticides without knowing about their risk to the environment or people



Semantical Correctness

- **Hazard:** potential of a substance or activity to cause harm (adverse effects) under a specific set of conditions
 - Do not confuse toxicity with hazard
 - Toxicity is the innate capacity to cause harm
 - Results from the specific 3-D structure and specific biochemical targets
- **Risk:** probability (likelihood) of adverse effects occurring
 - Function of the magnitude of exposure (or contamination)
 - No zero risk

Separate But Not Equal

- **Risk assessment:** scientific endeavor for determining the likelihood of bad things happening
 - Mandated by statutory and administrative (regulatory) law
 - Mostly science based activity: hypothesis, experiment, observation
- **Risk management:** social endeavor for avoiding bad things
 - Mandated by statutory law
 - Implementation defined by administrative law
 - Influenced by politics, economics, social goals

The Conventional Paradigm

- Risk management informed by risk assessment continues to be successfully applied to solving agriculture's water quality and worker exposure issues
 - Carried out by Federal & state regulatory agencies
 - Carried out by grower coalitions
 - Carried out by individual growers
- Any objective assessment would show that the trend in water quality is all positive
- Change in types of insecticides should quell worker concerns
- So why do we always seem to be in crisis mode?



The real issue confronting agriculture today may not be whether an activity contaminates water or a worker is exposed

The real issue may be mandates decreed by courts as a replacement for good agricultural practices promulgated through a concerted and debatable process of regulatory risk assessment & management



The Almighty FIFRA??

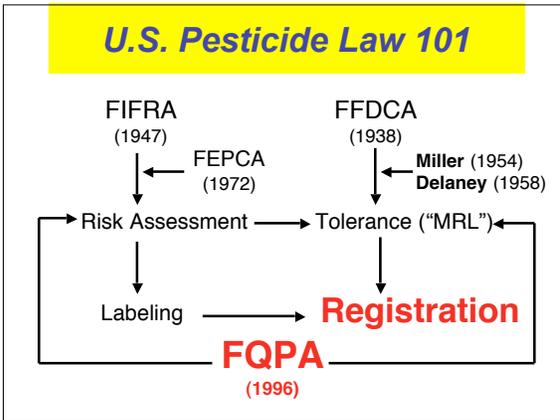
(Federal Insecticide Fungicide & Rodenticide Act)



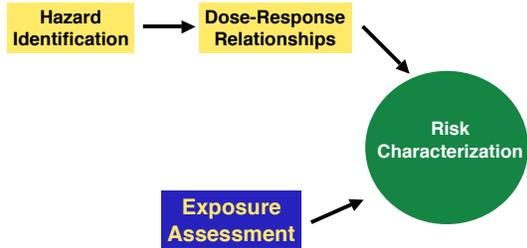
FIFRA Rules



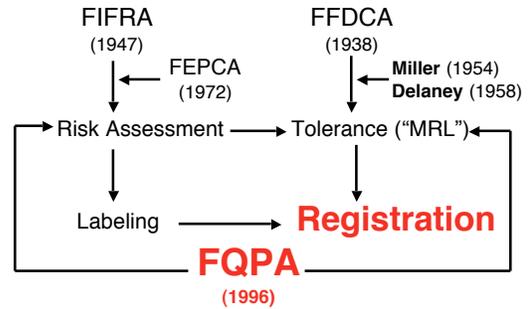
- Until recently, policies, regulations, & standards set under the mandate of the Federal Insecticide, Fungicide & Rodenticide Act essentially governed pesticide use (in the broadest sense--the whole technology)
- Although pesticides are arguably the most intensely scrutinized and regulated chemical technology, the law historically and presently in large part allows consideration of benefits of use as well as an assessment of risks

Risk Assessment-- Testing the Probability of Harm



U.S. Pesticide Law 101



The Pesticide Label It's the Law

- All registered active ingredients formulated into commercial products
 - All individual products must be registered, but registration not given until label developed and approved
- The label is the governing law
 - Identification of active ingredient and contents
 - Legal uses (crops, maybe specific pests)
 - Rates of application; application methods
 - Personal protective equipment
 - Restrictions on use (no drift; no application near water; sometimes region-restricted)
 - Directions for disposal

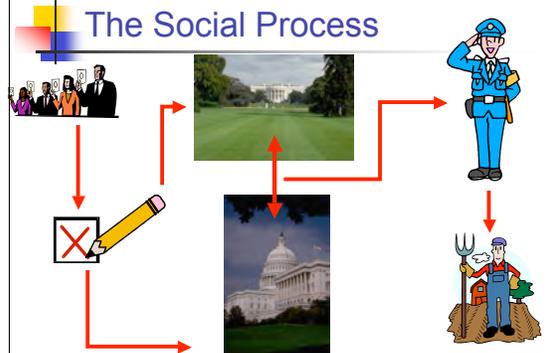
The Pesticide Label

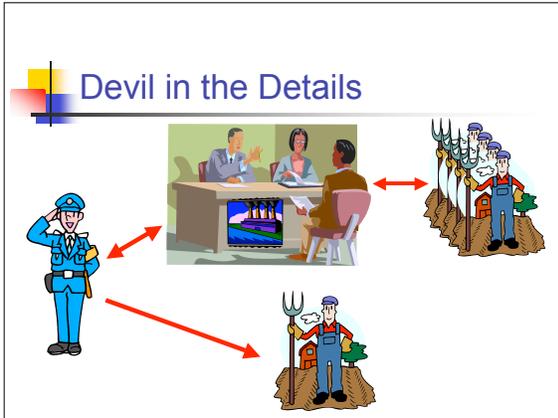
Prime Mechanism of Controlling
Pesticide Use

Controlling Pesticide Use Ensures

Reasonable Certainty of No Harm
To Human Health & Environment

The Social Process





The Rise & Fall of Control by FIFRA

- ### How & Why Is FIFRA Being Superseded?
- Clean Water Act
 - Endangered Species Act
 - State Occupational Health & Safety Laws

Irrigation district to pay for fish kill

MEDFORD — The Talent Irrigation District has agreed to pay \$200,000 to settle a lawsuit over a 1996 herbicide spill that killed 92,000 young salmon and steelhead in a nearby creek.

Tri-City Herald
Nov. 9, 2001

- ### Talent Irrigation Case
- Headwaters, Inc. & Oregon Natural Resources Council Action (ONRC) filed a citizen lawsuit against the Talent Irrigation District for violations of the Clean Water Act by applying the aquatic herbicide Magnacide H to its canals without obtaining a National Pollution discharge Elimination system permit

- ### Talent Irrigation Case
- The District Court of Oregon ruled in favor of Talent
 - Premise: Canals were indeed waters of the U.S. covered by the Clean Water Act, and the herbicide was a pollutant
 - Nevertheless, the court concluded no permit was required because the product label approved by the EPA under FIFRA did not require the user to acquire a permit
 - Bottom Line: District Court ruled FIFRA trumps the CWA
-

Talent Irrigation Case



- Headwaters & ONRC appealed to the US Court of Appeals for the Ninth Circuit (8/2000)
 - 9th Circuit Court ruled that the approved product label did not obviate the need to obtain an NPDES permit; thus, the the lower Court's decision was reversed
- Bottom Line: Weed control in irrigation systems connected to natural waters of the states under the jurisdiction of the U.S. 9th Circuit Court of Appeals must obtain an NPDES prior to applications of herbicides



Why CWA Trumps FIFRA

- Residual pesticide left in water after application is a "pollutant"
- Irrigation canals are connected to natural waters of U.S.
- CWA says discharge of pollutants into waters of the U.S. requires a permit, which allows a polluter to discharge a specified amount of the pollutant

Did EPA Innocently Push the Court to Its Conclusion?

- Amicus brief filed by the EPA states:
 - "In approving the registration of Magnacide H, EPA did not warrant that a user's compliance with the pesticide label instructions would satisfy all other Federal environmental laws."
 - "Indeed, EA approves pesticides under FIFRA with the knowledge that pesticides containing pollutants may be discharged from point sources into the navigable waters only pursuant to a properly issued CWA permit."
- 9th Circuit response: "This agency position is entitled to some deference."



So the Label's Not Necessarily the Law??

- In 1995, EPA issued a public notice that a label's failure to include the possible need for a NPDES permit "does not relieve a producer or user of such products from the requirements of the Clean Water Act." (PR Notice 95-1)




SALMON INFORMATION CENTER
 1-877-SALMON-9 • WWW.SALMONINFO.ORG
 TRI-COUNTY ENDANGERED SPECIES ACT RESPONSE

Oregon lawsuit changes pesticide use in Washington irrigation canals

The Associated Press (05/15/01)

A federal appeals court ruling in an Oregon case could limit the use of chemical weed controls in irrigation canals across the West.

- Latest News
- Salmon Information
- ESA Information
- Contact Information
- Public Meetings
- Get Involved
- Frequently Asked Questions
- Tri-County Salmon Recovery



WA Dept. of Ecology Solves the Aquatic Pesticide NPDES Conundrum

WA State Department of Ecology / Water Quality Home / Aquatic Pesticides Home

AQUATIC PESTICIDE PERMITS

Irrigation System Aquatic Weed Control NPDES General Permit

The Barn Door Is Open

- The League of Wilderness Defenders/Blue Mountains Biodiversity Project et al. successfully sued the U.S. Forest Service, PNW Region for failure to obtain an NPDES
 - Issue: Aerial insecticide spraying in WA & OR for Douglas fir tussock moth
 - 2nd Issue: USFS failed to adequately analyze the issue of pesticide drift in its Environmental Impact Statement

Give an Inch, Take a Yard??

Oregon

Group to sue agencies over herbicide permits

“Conservation groups ... will sue key state and federal agencies over an herbicide use permit issued to the Klamath Irrigation District, where endangered sucker fish live”

How the ESA Trumps FIFRA

THE GREAT SALMON HOAX

An Eyewitness Account of the Collapse of Science and Law and the Triumph of Politics in Salmon Recovery

by James L. Buchal

Federal ESA

- Section 4** (Factors for Listing Determination)
 - Present or threatened destruction, modification, or curtailment of its habitat or range;
 - Over-utilization for commercial, recreational, scientific, or educational purposes;
 - Disease or predation;
 - Inadequacy of existing regulatory mechanisms;
 - Other natural or manmade factors affecting its continued existence.**

According to EarthJustice

- Pesticides have profound effects on northwest salmon and may be a serious factor in their decline

EARTHJUSTICE
Because the earth needs a good lawyer

Threatened or Endangered Species Listings in Salmon Recovery Regions



The Lawsuit Argument

- Section 7(a)(2) of the ESA requires any entity engaging in an activity that may affect listed species to consult with agencies administering the ESA (includes National Marine Fisheries Service and Fish & Wildlife Service)
 - A single registration of a single pesticide is considered a single agency action that could affect salmon
- Earth Justice argued the case successfully before the US District Court of Western WA

The ESA Consent Decree

- EPA will consult with NMFS on 54 targeted pesticides
- Mitigation needed if deemed harmful to salmon
- Court received new petition from WA Toxics Coalition (represented by Earth Justice) for injunctive relief (11/26/02)
 - Prohibit use of listed pesticides unless 300 ft buffer around salmon-bearing streams is established for aerial application or 60 feet for ground application

The Argument for an Injunction

- Indeterminate amount of time will be required for EPA to consult with NMFS about the 54 pesticides under re-registration review
 - Then, NMFS must issue a biological opinion about "safety" of a pesticide to a salmon population and what action should be taken to protect salmon
- Salmon in danger in interim until consultation and biological opinion finished, thus need protection
 - No-spray buffer zones of 60 and 300 ft for ground & aerial application, respectively
 - Only certified applicators have access to 13 urban use pesticides

Was EPA an Innocent Defendant?

- EPA was a defendant in the WA Toxics Coalition lawsuit and motion for injunction
- Ironically, EPA's own ecorisk assessment was entered as evidence of imminent hazard to salmon
- How could EPA possibly have defended itself by telling the judge to discount the validity of its ecorisk assessment methods as applied to salmon populations?????

The Flood Gates Open

- Lawsuit against EPA and Oregon DEQ for issuing NPDES permit to Klamath Irrigation District to treat canals with acrolein (Oct. 2002)
 - Issue: presence of listed sucker fish
- U.S. Bureau of Reclamation sued for lack of "consultation" with U.S. Fish & Wildlife Service for not implementing required monitoring during use of acrolein in the Klamath Basin and subsequent reporting on use restrictions compliance

The Flood Gates Open

- Californians for Alternatives to Toxics et al. win Consent Decree against EPA for not complying with Sections 7 of the ESA (April 2002)
 - Issue: Endangered plant species & salmon
 - Specific pesticides named

The Flood Gates Open




- Complaint for Declaratory & Injunctive Relief file by Center for Biological Diversity against EPA (April 2002)
 - Issue: Pesticide registration jeopardizing the continued existence of the California red-legged frog, a listed species and adversely modifying habitat
 - Agency's actions in violation of four provision of the ESA, including lack of "consultation" and "take"

Worker Protection





Cancer rates high in Hispanic ag workers, study says

High court ruling designed to protect state's farm workers

By Shirley Wentworth
Herald Basin bureau

The Washington State Supreme Court ruled Thursday that the Department of Labor and Industries must develop mandatory regulations to ensure farm workers are not poisoned by pesticides.

However, Jerry Gill, spokesman, said the 30 days to decide whether to go ahead and rework regulations to conform to the ruling.

"We're just not re what we'll do on this adding that the court long and complicated Labor & Industries

The L&I Cholinesterase Monitoring Rule--A Quick History

- L&I was successfully sued by a group two workers for failing to implement a rule that would be protective of them in the "work place"
 - They requested L&I to implement a ChE monitoring rule in 1986 and again in 1991
 - California was doing it, why shouldn't WA?
 - L&I issued rulemaking recommending ChE monitoring but not requiring it;
 - Workers sued
 - Workers lost first suit, because court agreed with L&I in '93 that technology couldn't be proven feasible (reliable) enough to implement in WA

ChE Monitoring--Brief History

- L&I convene a technical advisory group (TAG) in '95 that also recommends monitoring but not feasible to require it at the time
- Second request for ChE monitoring rule denied by L&I in '97
- Workers sue again; case becomes class-action
- New suit eventually heard by the WA Supreme Court
- The "Supremes" considered advances in the technology as reported by the TAG, and said L&I acted "capriciously" and therefore violated the WA Industrial Safety & Hygiene Act (WISHA) in not implementing a ChE rule

The Supremes Ruling

- "...we conclude that the pesticide handlers met their burden of showing the the Department's 1997 denial of the pesticide handler's request for rulemaking was unreasonable."
- "We therefore order the Department to initiate rulemaking on a mandatory cholinesterase monitoring program for agricultural pesticide handlers"

The Rule (Effective 2/04)

- Maintain accurate records of employees handling OP and CB insecticides
- Implement a medical monitoring program
- Identify a physician who will provide ChE testing and make recommendations
- Make ChE testing available
- Respond to depressed ChE
- Provide medical removal protection benefits
- Maintain records
- Provide training
- Implement plan

Progress Report--as of 9/3/04

- 2753 blood samples were received & tested for baseline cholinesterase levels
- 1048 blood samples were received & tested for follow-ups (after prescribed number of hours worked)
- Testing thus far has covered 2767 farm workers (many more workers submitted baseline samples than follow-up samples)
- 19.6% of follow-up blood samples indicated at least 20% depression (which only indicates exposure)
 - Represents 118 workers
- 22 workers (~3.7%) had cholinesterase depression requiring work removal (compared to ~602 workers with follow-ups)

The Fun's Just Beginning!

- United Farmworkers et al. file complaint against EPA for declaratory and injunctive relief (U.S. District Court for Western WA, Jan '04)
 - Issue: Re-registration of azinphos-methyl and phosmet made on the basis of faulty analysis/data
 - Flawed risk-benefit analysis that did not account for harm to worker and use of assumptions and data contradicted by peer review
 - Use of data on worker exposure that were never made available for public review and that deviate from the data and methods used consistently by the agency in the past

Conclusions

- FIFRA has not been interpreted to take primacy over other Federal statutory law designed for environmental protection
 - An Omen of the Future: The U.S. 9th Circuit Court of Appeals "has already held that registration under FIFRA is inadequate to address environmental concerns under the National Environmental Policy Act"
- While EPA is the Defendant in many lawsuits, the agency's actions actually lend support to the Court's interpretation regarding the CWA and ESA

Conclusions

- Occupational health and safety laws on the state level may be the next wave for Federal Court intervention and further "downsizing" of FIFRA's primacy
- Are we heading to a future where pesticide users will be guided more by Court orders than EPA regulations???

Can Ag & Forestry's Pesticide Issues Be Managed Before They Become Problems??

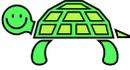
- Education, education, education
 - Importance of nonpoint source management
 - Soil and water conservation practices
 - Drift reduction practices
 - Importance of IPM (Integrated Pest Management)
 - Look before you leap
 - Worker & homeowner education
- Publicity, Publicity, Publicity
 - Proactive PR
 - Funding demonstration projects
 - Respond to negative reports with scientific assessments, not rhetoric



The Technological Fix?



- As the technology changes, the problem will take care of itself!!
 - The era of reduced risk pesticides
 - Tend to be used at lower rates
 - New herbicides tend to be less persistent than previous generation
 - Glyphosate is the safest herbicide ever invented!!!!!!!!!!!!!!
 - New insecticides tend to have extremely low toxicity to humans, fish, and wildlife
 - In combination with very low use rates, residue detections will be very difficult and meaningless from a risk perspective



For More Information



- <http://feql.wsu.edu>
 - Food & Environmental Quality Lab
- <http://wsprs.wsu.edu/>
 - WA State Pest Management Resource Ctr.
- <http://aenews.wsu.edu>
 - Agrichemical & Environmental News
- afelsot@tricity.wsu.edu