Pesticide Drift: Risk Management and Labeling

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Presentation Overview

- Background
- Pesticide Registration and Registration Review Process
- Risk Assessment & Risk Characterization
- Risk Management
- Drift: Background & Labeling
- Drift Reduction Technologies (DRT)
- Q&A

Major Environmental Statutes (or Laws)

- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**
  - When used according to its label, a pesticide "will not cause unreasonable risk to humans or the environment, considering economic, social, and environmental costs and benefits of the pesticide"
  - Risk-benefit standard - considers **human** and **ecological** risk and requires, for non-dietary risks, the consideration of the **benefits** from the use of the pesticide
- **Federal Food, Drug, and Cosmetic Act (FFDCA)**
  - "A reasonable certainty of no harm" is the general safety standard
  - Risk-only standard – does not allow the consideration of benefits

- **Food Quality Protection Act (FQPA)**
  - Imposed stricter standards for tolerance setting including enhanced children's protection, aggregation of exposures when looking at human health risk, cumulative assessments
  - Required periodic review of pesticides (Registration Review)

Overall Pesticide Registration and Registration Review Process

New Registration or **Registration Review** Initiation

Registration Review: Public Comment Period (Preliminary Work Plan)

Science Reviews and Risk Assessment

Health Effects Evaluation, Ecological & Environmental Effects Evaluation, Establish Endpoints of Concern, Establish Reference Dose and Safety Factors, Assessment of Hazards and Risk

New Registration: Product Chemistry, Acute Toxicity, Efficacy

Registration Review: Public Comment Period (Draft Risk Assessment)

Risk Management and Regulatory Decision

Risk Assessors Review of Risk Mitigation Measures, Risk Managers Coordinate with Team to Consider Risk and Benefit (if applicable) in Formulating Risk Management Decision

Registration Review: Public Comment Period (Proposed Decision)

Federal Register Publication

Risk Manager Develops Document, Program Wide Concurrence, Management Signature, Public Dissemination

Registration Review: Revise Labels, as needed

Registration and Registration Review

- **Registration Process (New Actives and New Uses)**
  - Applicant develops a pesticide, generates data and submits an application for a particular use (or uses) to the EPA
  - EPA reviews submitted data to assess risk and, where appropriate, the benefits associated with a proposed pesticide/use.
  - EPA makes its decision based on all available information
    - Typical application for a new active ingredient includes >100 studies

- **Registration Review**
  - Statutorily required review of pesticides at least every 15 years
  - Intended to ensure that each pesticide's registration is based on current scientific and other knowledge regarding the pesticide, including its effects on human health and the environment.
  - EPA must complete first cycle of registration review by October 1, 2022

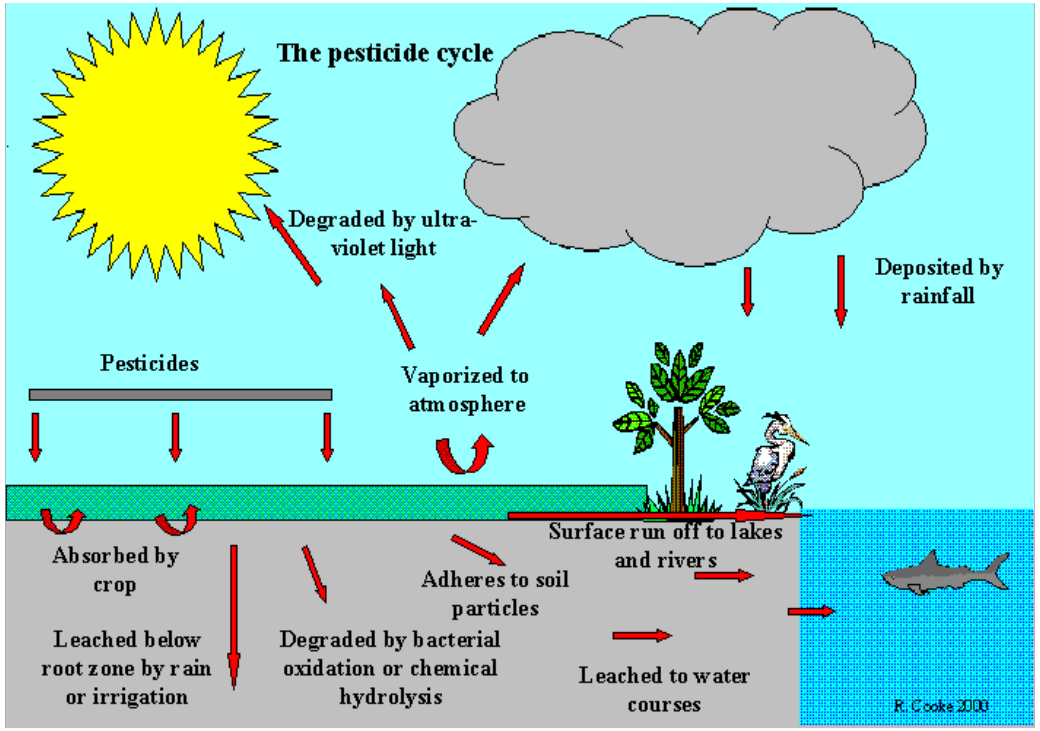
Risk incorporates both hazard and exposure

Human Health Risk Assessment

- Potential routes of exposure, hazards, and estimates risk for various groups including U.S. population and potentially sensitive subpopulations including pregnant women, infants, and children.
- Scenarios potentially assessed:
  - Dietary (food and water)
  - Residential, including potential bystander risk from pesticide drift
  - Occupational

Environmental Fate and Ecological Risk Assessment

- Identifies potential routes of exposure, hazard, and estimated risk to taxa which may include plants, birds, invertebrates, fish, and mammals
- Routes of Exposure
  - Runoff
  - Volatilization
  - Eroded Sediment
  - **Drift**
- Loads from each routes are added to together
- Aquatic: runoff, sediment, & drift



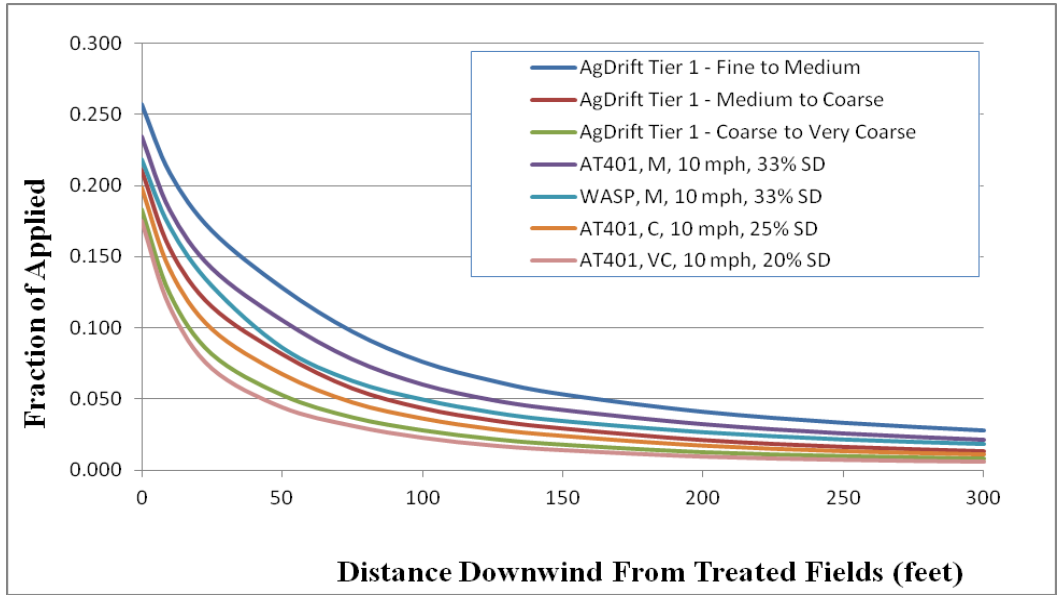
Spray Drift Modeling: AgDrift

- Primary Agency Model is AgDrift
  - Developed by Spray Drift Task Force
  - Core of model for aerial applications-+ is very similar to AgDisp and FSCBG
  - Aerial component is mechanistic
  - Ground boom and air blast components are regression models

EPA Model: AgDRIFT

- Assumptions
- Factors that impact results
  - Droplet size
  - Release height
  - Wind speed
  - Boom width
  - Swath offset
  - Weather conditions
    - Presence of inversion

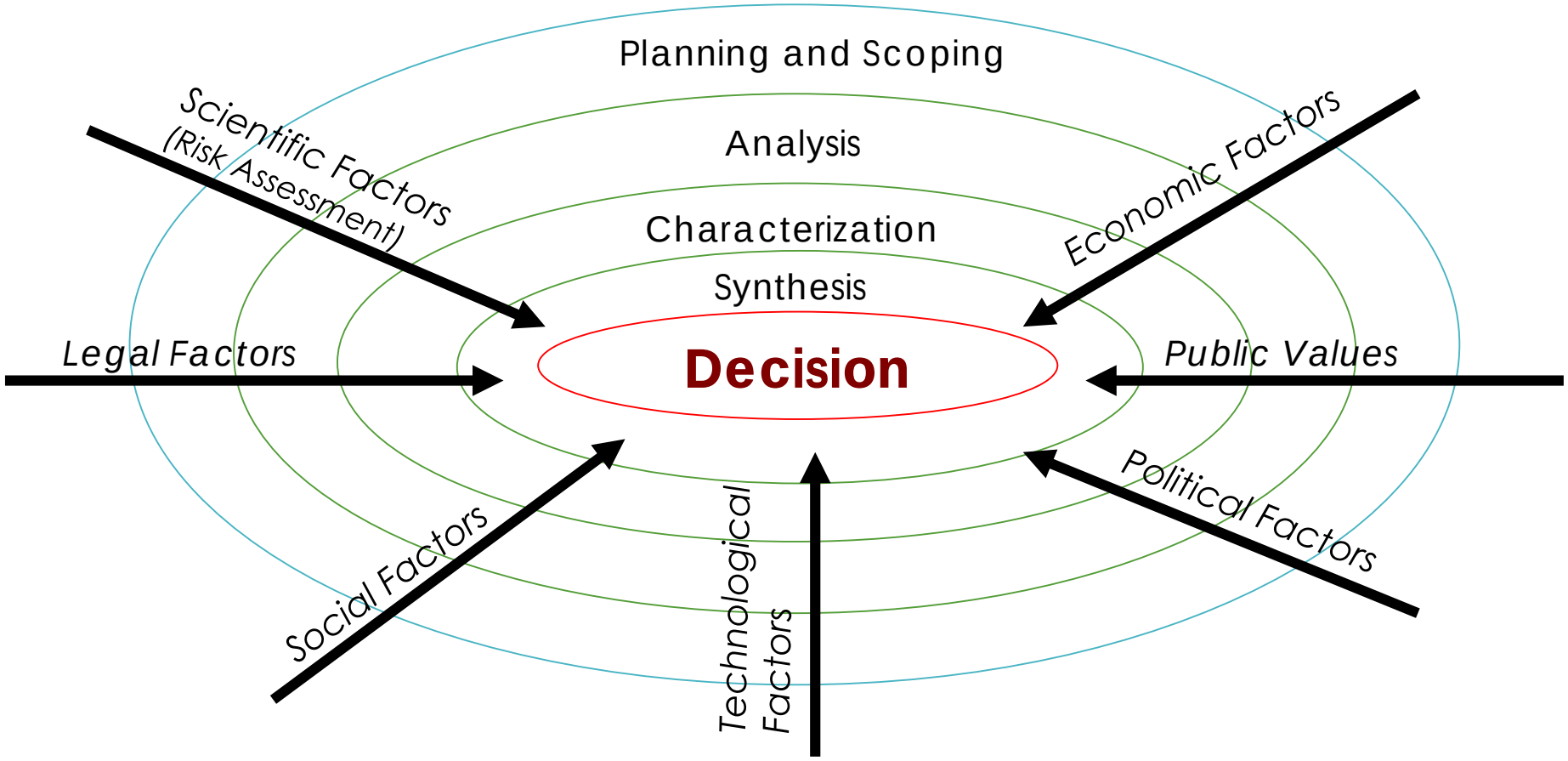
Spray Drift Deposition Values



Risk Management

- **Risk Management Goals**
  - Ensure that registered pesticides (continue to) meet the statutory standards for protecting human health and the environment
  - Effectively assess, manage and mitigate risks based on best available science and policy, involving stakeholders and the public
- **Risk Managers**
  - Consider the results of the risk assessments
  - Have an understanding of the benefits of a pesticide, as well as alternative pesticides that are already registered
  - Develop measures needed to mitigate any identified risks
  - Negotiate with stakeholders regarding potential modifications to the product or labeling that must be made to mitigate risk

Risk Management Framework



Pesticide Drift: What is It?

- The physical movement of pesticide droplets or particles through the air from the target site to any non-target site
- Pesticide spray and dust drift occurs during application or soon thereafter

Pheasant Ridge Vineyards Photo: Air Blast Sprayer

Pesticide Drift: What It's Not

- Pesticide drift does not include the movement of a pesticide caused by other types of airborne migration, such as
  - volatilization from the application site after application
  - windblown soil particles

Pesticide Drift: Background

- Many outdoor use pesticides have the potential to drift during application
  - Liquid and solid formulations
  - Ground, aerial and handheld application methods
  - Agricultural, commercial and residential use sites

Pesticide Drift: Labeling

- WPS required drift statement:
  - “Do not apply this product in a manner that will contact workers or other persons, either directly or through drift.”
- Product-specific application restrictions are determined on a case-by-case basis, through OPP’s risk assessment processes
  - Restrictions *can* include
    - minimum droplet or particle size
    - maximum release height
    - maximum/minimum wind speeds
    - buffer zones for sensitive sites

Pesticide Drift: Labeling

- Aim for consistent, clear, enforceable labeling
- Registration Review presents good opportunity to improve pesticide drift labeling across wide number of product labels
- Feedback from stakeholders is important for improving labeling
  - Registration Review Public Comment Periods
  - SLITS
- Based on comments in Registration Review, made changes to address concerns

Pesticide Drift: Labeling in Registration Review

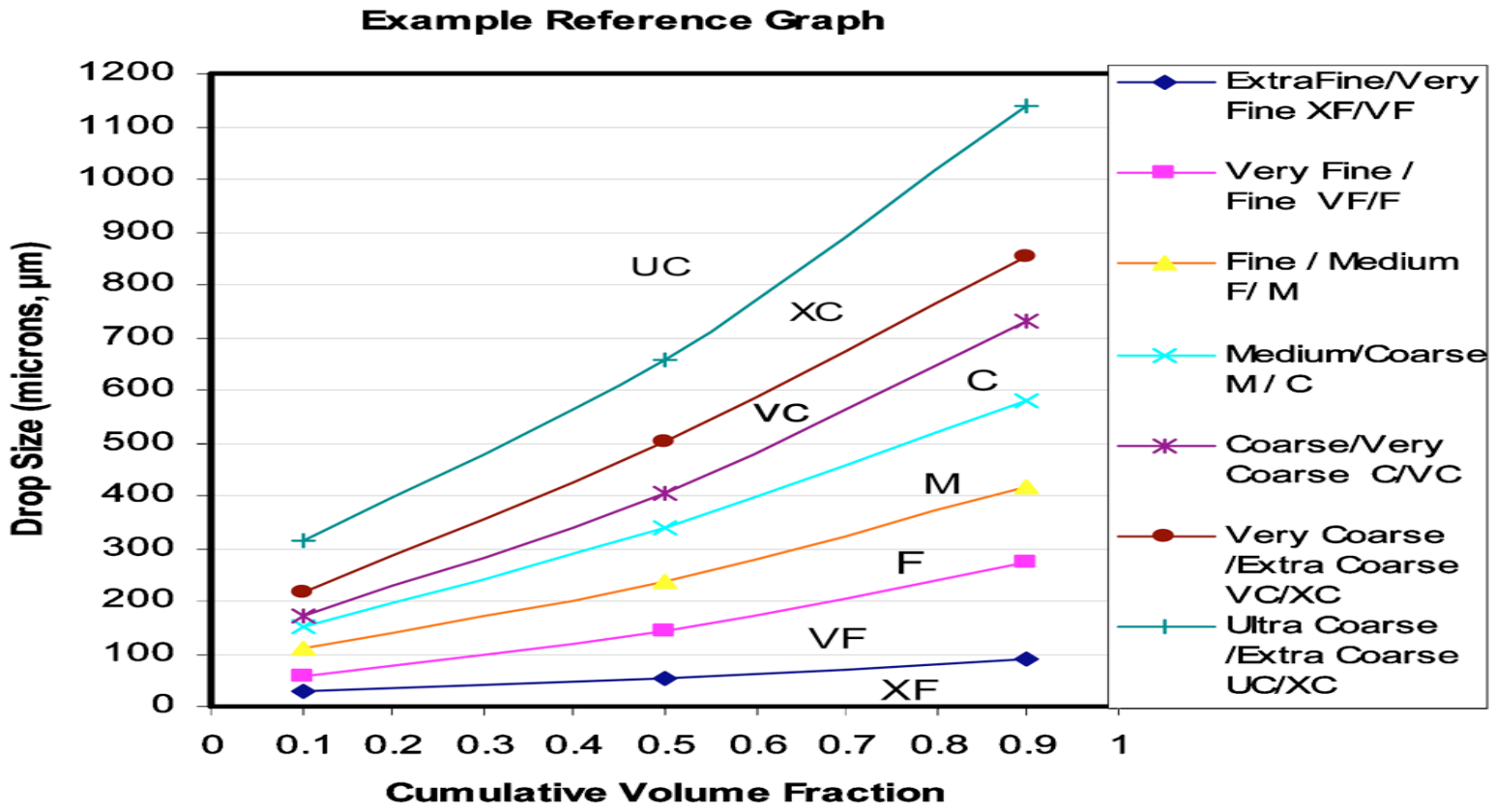
- Droplet size
  - Depending on potential risk, efficacy considerations, risk managers may consider increasing enforceable droplet size requirements to reduce the distance of potential off-target drift
- Release height
  - In general, a lower release height has the potential to reduce off-target drift
  - For aerial applications, 10 feet release height is assumed in EPA's risk assessments
  - For ground boom applications, both low (20 inches) and high (50 inches) release heights are assessed
- Wind speed
  - 10 mph is the typical speed assessed

Pesticide Drift: Droplet Size

Due to confusion on labels, working to remove all labeling referring to volumetric mean diameter (VMD); retain references to ASABE standard

Droplet Size VMD Range	ASABE S-572.1 Classification Category	Color Code
Under 60	Extremely Fine (XF)	Purple
60-105	Very Fine (VF)	Red
106-235	Fine (F)	Orange
236-340	Medium (M)	Yellow
341-403	Coarse (C)	Blue
404-502	Very Coarse (VC)	Green
503-665	Extremely Coarse (XC)	White
Over 665	Ultra Coarse (UC)	Black

Droplet Size Category Division



From
ANSI/ASAE 572-1 (March 2009)

Pesticide Drift: Wind Speed

- In registration review feedback from stakeholders resulted in changes to proposed decisions
- Comments and analysis from the National Agricultural Aviation Association (NAAA) resulted in changes to a number of EPA's Registration Review Decisions
  - Requested wind speed increase to 15 mph if the boom length is reduced; results in similar drift distances 200 ft from edge of field
  - EPA has been implementing this change when possible depending on the risk concern

Pesticide Drift: Release Height and Inversion Restrictions

- Generally lower release heights may reduce drift
- Aerial applications:
  - 10 feet release height, except when pilot's safety is a concern
- Ground boom applications:
  - 2-4 feet depending on use, timing of application, other factors
- Temperature inversions
  - Do not apply during temperature inversions

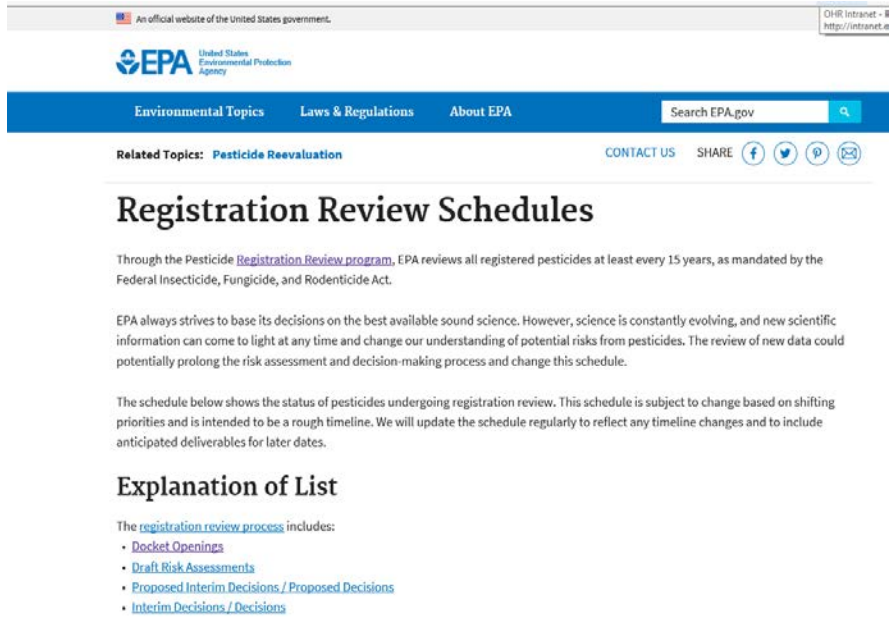
DRT and Risk Management

- EPA has and continues to encourage and support technologies that keep more of the pesticide on the intended use site, which
  - Increases efficacy
  - Reduces unintended exposures to people, non-target organisms
  - Reduces liabilities for the applicator

- EPA encourages stakeholder to identify technologies or chemicals that may benefit from DRTs as part of the evaluation process.

- The schedule for Registration Review is on EPA's website the link below.

https://www.epa.gov/pesticide-reevaluation/registration-review-schedules



Questions?

Thank you!

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