



Unmanned aerial vehicle (UAV) and Robotics and Pesticide Regulations

**STATE FIFRA RESEARCH & EVALUATION GROUP
(SFIREG)**

June 8, 2021

What's Happening in the EPA

- Working with several stakeholders/working groups – both US and international on UAVs:
 - SFIREG/APPCO
 - PPDC – Emerging Technology Workgroup
 - RPAAS WG (led by Canada)
 - Organization of Economic Cooperation and Development (OECD) WG on drones
 - Completing literature review on drone applications – efficacy, drift, exposure, modeling
 - Center of Excellence for Regulatory Science in Agriculture (CERSA) Workshop on UAS and Manned Aerial Applications (Dec 2020)
 - Focused on:
 - Potential benefits and current and future anticipated uses of UAS
 - Spray drift models for existing application methods and UAS

EPA Risk Assessment – UAV Considerations

- Currently no approved model to evaluate drift from emerging technology like UAVs
- Priority for EPA is to understand the exposure considerations that this emerging technology presents and how it compares to existing application technology
- EPA continues to work towards a standard policy and risk assessment method to evaluate potential risk from emerging technology like UAV application

PPDC Emerging Agricultural Technologies Workgroup: Roster, May 2021

- **Manojit “Mano” Basu**, CropLife America (Co-chair)
- **Ed Messina**, EPA/OPP (Co-chair)
- **Ruben Arroyo**, Riverside County Department of Agriculture and Measurements Standards
- **Dan Cederberg**, Teejet
- **Gilbert Del Rosario**, Corteva Agriscience
- **Adam Finch**, BASF
- **Josh Friell**, The Toro Company
- **Brad Fritz**, USDA, ARS
- **Rebecca “Becca” Haynie**, Syngenta
- **Ramon Leon**, North Carolina State University
- **Lauren Lurkins**, Illinois Farm Bureau
- **Daniel Markowski**, Vector Disease Control International
- **Dan Martin**, USDA, ARS
- **Jacob Moore**, ADAMA
- **Robby Personette**, Wisconsin Department of Agriculture
- **Damon Reabe**, National Agricultural Aviation Association
- **Karen Reardon**, RISE (Responsible Industry for a Sound Environment)
- **Margaret Reeves**, Pesticide Action Network
- **Brian Satorius**, Independent Grower
- **Scott Shearer**, Ohio State University
- **Bryan Sanders**, HSE-UAV
- **Christina Stucker-Gassi**, Northwest Center for Alternatives to Pesticides
- **Nick Tindall**, Association of Equipment Manufacturers
- **Anne Turnbough**, AMVAC Chemical
- **Greg Watson**, Bayer

PPDC – Emerging Technology WG

Charge Questions

- How should EPA obtain a greater understanding of how the use of emerging agricultural technologies leads to reduced or increased risks that differ from those resulting from current methods?
- What changes to EPA's approach to pesticide labels, if any, are needed to accommodate emerging technologies?

Deliverables Discussed at ET WG

- Deliverable 1 – List of Emerging Technologies
 - List of emerging technologies that can be used for or, in support of, or in place of pesticide application
 - Any regulatory oversight or risk assessment changes by EPA needed to facilitate their use
- Deliverable 2: Deep dive on Autonomous Application Platforms operated remotely and/or manually
 - How these technologies lead to reduced or increased risks that differ from those resulting from current methods
 - What changes to EPA's approach to pesticide labels, if any, are needed to accommodate these technologies

Deliverable 1: List of Technologies

Hardware

UAVs/Drones

Spray/Nozzles

Ground Robots

Equipment Improvements to Existing
Application Equipment

Data and Analytics

Maps

Statistical Analysis

Prescriptive Agriculture

Artificial Intelligence

Deliverable 1: Technologies List

Equipment Improvements

Autonomous Spray Systems Aboard Current Manned Aircraft and Ground Sprayers

Spot Farming

Boundary Mapping

Smart Guidance

Boom Height Control

Rate Control

Section Control

Equipment Mounted Weather Stations

Ground Based Robots

Land care robot

Robot for mechanical weed control

Tool-carrying robot

Bug vacuum

Autonomous Tractor

Autonomous Ground Sprayer

Spray/Nozzle

Nozzles that dramatically reduce or eliminate small droplets prone to drift

Direct Injection

Stacked (Tiered) Nozzles

Targeted Spray Technology

Pulse with Modulation

Future Work

Deliverable 1:

- Any regulatory oversight or risk assessment changes by EPA needed to facilitate their use including:
 - *Regulatory Framework from a risk standpoint and suggest measurable benchmarks that must be proven to realize risk assessment benefits, i.e. if a tech reduces drift by 80% this is fully accounted for in the risk assessment process and communicated in label language*

Deliverable 2:

- How these technologies lead to reduced or increased risks that differ from those resulting from current methods
 - *Continue engaging with industry, academics, CERSA, EPA and other stakeholders to develop understanding for a developing an outline of a risk framework*
- What changes to EPA's approach to pesticide labels, if any, are needed to accommodate these technologies
 - *Use the learnings to recommend pesticide label changes that may or may not be required to accommodate these technologies*