

Agricultural Emerging Technology Workgroup – EPA considerations



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Pesticide Programs Dialogue Committee Spring Meeting
May 2022



Outline of Presentation

- Agricultural Emerging Technology Workgroup (ETWG) Roster
- Original Charge Questions
- Summary of ETWG outcomes from October 2021 report
- EPA Response/Activities
- ETWG New Charge Questions
- PPDC Feedback



PPDC ETWG Roster (2021 and 2022)

- **Greg Watson**, Bayer (co-chair 2022)
- **Ed Messina**, EPA/OPP (Co-chair)
- **Amy Blankinship**, (Co-chair 2022)
- **Ruben Arroyo**, Riverside County Department of Agriculture and Measurements Standards
- **Manojit “Mano” Basu**, CropLife America (Co-chair 2021)
- **Dan Cederberg**, Teejet
- **Gilbert Del Rosario**, Corteva Agriscience
- **Adam Finch**, BASF
- **Josh Friell**, The Toro Company
- **Rebecca “Becca” Haynie**, Syngenta
- **Ramon Leon**, North Carolina State University
- **Lauren Lurkins**, Illinois Farm Bureau
- **Bon Mann**, National Association of Landscape Professionals (2021)
- **Daniel Markowski**, American Mosquito Control Association
- **Dan Martin**, USDA, ARS
- **Jacob Moore**, ADAMA
- **Robby Personette**, Wisconsin Dept. of Agriculture (2021)
- **Damon Reabe**, National Agricultural Aviation Association
- **Karen Reardon**, RISE (Responsible Industry for a Sound Environment)
- **Margaret Reeves**, Pesticide Action Network
- **Bryan Sanders**, HSE-UAV (2021)
- **Dwight Seal**, North Carolina Department of Agriculture (2022)
- **Scott Shearer**, Ohio State University
- **Christina Stucker-Gassi**, Northwest Center for Alternatives to Pesticides
- **Nick Tindall**, Association of Equipment Manufacturers
- **Anne Turnbough**, AMVAC Chemical



PPDC – ETWG 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?
 - A link to the Emerging Technology Working Group's October 2021 report is [here](#). The presentation that the group used to present the report to the full Pesticide Program Dialogue Committee is [here](#).



PPDC – ETWG

Outcomes and Recommendations

- Provided a Technologies List to increase awareness of emerging technologies in several categories
 - Aerial and ground robotics – e.g., Unmanned aerial vehicles (UAVs), autonomous tractor
 - Data and operations – e.g., weather stations, pest predictions, boundary mapping, rate control
 - Spray/nozzle – e.g., direct injection, compatible/variable rate nozzles

- Recommend OPP establish regulatory equivalency for application, registration, exposure, spray drift, and residues for drone/UAV technology, and use of existing exposure estimates to reflect currently employed manned aerial application technology

- Balance a future-looking mindset for future technologies. Support adoption of current new technologies. Seek standardization (e.g, based on rotor number) so that current efforts can work for future technologies



PPDC – ETWG

Outcomes and Recommendations

- Outlined potential unique issues related to emerging technology around benefits and challenges
 - Benefits (e.g.)
 - Potentially less worker exposure and time/labor savings (particularly compared to hand application)
 - Could be used in tough and difficult conditions where traditional may not be feasible or hazardous
 - Could reduce environmental loading
 - Benefits could be over-stated in early development and rollout, so need to quantify benefits
 - Challenges (e.g.)
 - Potential differences in off-site movement compared to current application methods that could impact non-target? Differences in pesticide efficacy or tolerances?
 - Potential additional considerations for training and safety?
 - What additional label language?



PPDC – ETWG

Outcomes and Recommendations

- Change OPP's approach to labels to mindset of digital transformation. Support labels that can be read and acted on by autonomous machines, including robots
- Cultivate among staff/contractors/collaborators digital competencies to accompany traditional science expertise and expanding the scope of the teams currently working on digital label initiatives to incorporate innovations such as drones
- Streamline label reviews. Standardize label language to eliminate need for product-by-product evaluation
- OPP should consider similar efforts by other groups (e.g., OECD subgroup on drones) for potential similarities, differences and overall understanding
- OPP should consider convene workshop(s) to familiarize OPP with drone technology and literature. Identify any data gaps



PPDC – ETWG Agency Feedback

- Agency appreciates the WG's compilation of emerging technologies and agrees with many of the stated benefits and challenges.
 - The agency is working to better understand the emerging technology utility and potential exposure profile (occupational handler/mixer/pilot; non-target organisms from drift) and how they compare to existing technologies.
 - This information will then inform policy and risk assessment frameworks as well as any potential changes to label language, if needed.

- Agency understands the need to develop a more digital-based label process and is working towards that with efforts such as OPPEL (and today's PPDC was to also acknowledge that need).

- Agency is working with several domestic and international partners to understand this emerging technology and how it fits into OPP's mission and risk assessment framework and risk management and will consider if a workshop hosted by OPP is necessary.



OPP Engagement on Emerging Technology

- OPP collaborating on issues around UAVs through representation on:
 - Organization of Economic Cooperation and Development (OECD) Workgroup on drones
 - 2021 – release a Report on the State of Knowledge on UASS in Agriculture – [OECD Paper](#)
 - 2022 – working on addressing data gaps, issues identified in 2021 report
 - North America Remotely Piloted Aerial Application Systems (RPAAS) Workgroup
 - Working on necessary data needs
 - Pesticide registrant task force and other stakeholder groups (e.g., CLA)
 - Working on drift/exposure protocols; using current literature to evaluate equivalency
 - Participation in workshops and conferences
 - American Chemical Society (ACS) Drone Symposium; RPAAS Workshops
 - CERSA Drift/UAS workshop
 - Discussed UAV applications and updates to modeling drift from manned aerial applications



Additional Activities Since October 2021 Report

- Additional ETWG meetings through May
- New Charge Questions
- Additional Meetings with EPA and ETWG on New Charge Questions



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Agreed New Charge Questions

- New Charge Questions:

- Is there information on availability and affordability of emerging technology for all communities?
- To account for emerging technologies, how should EPA OPP establish a process for:
 - Determining what additional information / data is needed
 - Updating risk assessment practices / SOPs
 - Updating regulatory approach to support emerging technologies

Targeted Application Case Study

- Target application – ‘spot spraying’
- Start with current risk assessment practices / SOPs, advise what should change for targeted application → additional info / data & label language
- Agnostic to application method

Using these examples:

- a) manned aerial
- b) UAV: off-site movement (including benchmark UAV type & spray system), BMPs / use conditions

- How should EPA OPP continue to establish a ‘digital mindset’ for its program and staff?
 - Use UAV example to start



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Next Steps

- Volunteers from ETWG to initiate work on addressing charge questions
 - Some examples:
 - Targeted Application Case Study: Dr. Dan Martin (USDA ARS, Aerial Application Technology Research, Texas A&M) to lead / facilitate
 - Emerging technology for all communities: Association of Equipment Manufacturers Sprayer Leadership team
- Additional volunteers from outside current ETWG roster may be needed to address charge questions
- Planning to deliver final report to PPDC at October 2022 meeting



Questions for PPDC

- Feedback on Charge Questions

Thank you

