DETERMINATION OF SPRAY DRIFT AND OFFSITE MOVEMENT

REDUCE RISKS AND MEET REGULATORY REQUIREMENTS

Get accurate, defensible data on the particle size distributions of your crop care formulations, tank mixes, and products to determine buffer zones for product labels. Battelle's full-scale, wind-controlled testing facilities reduce the time and significantly reduce the costs typically associated with laborious field-based spray drift studies.

Battelle brings over 30 years agriculture regulatory experience and extensive bioaerosol expertise for product test and evaluation, spray testing and analytical and risk assessment modeling expertise to fully characterize a product's risk of potential off-target movement. We have the equipment and expertise to conduct studies for product registrations and complex custom studies to meet your unique needs. Studies are conducted according to established ISO and ASTM standards for both U.S. and EU tests.

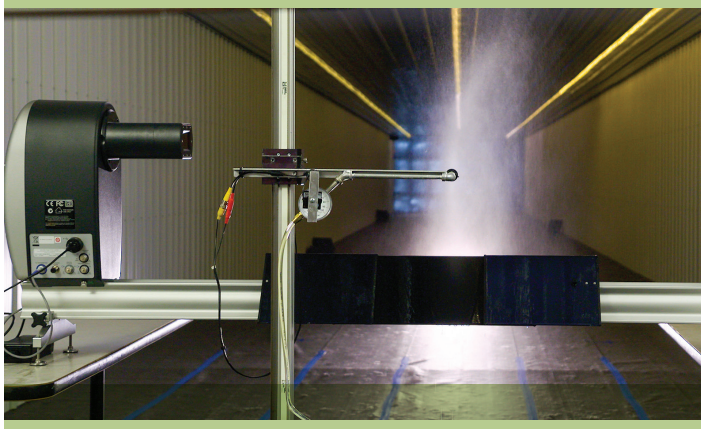
AGRICULTURAL DRIFT TUNNEL TESTING FACILITY

The Battelle Agricultural Drift Tunnel is a first-of-its-kind facility for spray drift and particulate size testing. It allows us to conduct studies under controlled wind speeds to determine how spray outputs are likely to drift under different wind speed. The tunnel produces wind speeds between 0 and 11 mph with smooth, laminar flow and low turbulence and variability. The tunnel was designed, built and tested by Battelle according to EPA guidance protocols for wind tunnel testing.

SPRAY DRIFT AND DOWNWIND DEPOSITION (WIND-CONTROLLED FIELD STUDY)

Assess downwind drift of spray material using a suite of collectors for ground sediment and airborne particle measurement. Battelle uses a wide range of collectors, including monofilament string, artificial foliage, rotary samplers, cascade impactors, impingers and Aerodynamic Particle Sizers (APS 3321). Collectors can be positioned at multiple locations up to approximately 100 feet (30 meters) downwind of the sprayer. Collected samples are analyzed following established procedures and can be customized as needed. Battelle can determine particle size and the volatility profile of active ingredients and formulations from a single spray. Volatility of the active ingredient or formulation would be measured using a PUF (polyurethane foam) sampler and quantified by validated analytical methodologies.

Determination of spray drift from a UAV/Drone under controlled wind conditions



Characterization of droplet size distribution from agrochemical tank mix formulations

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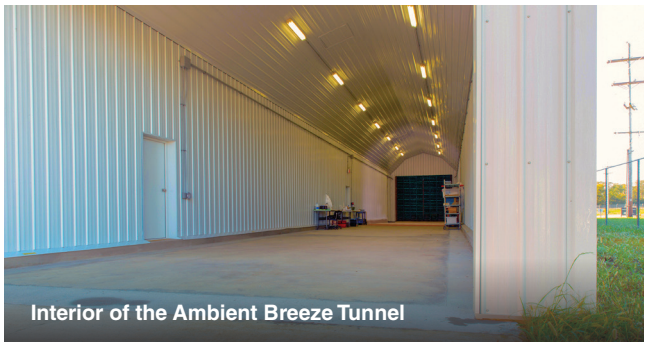
Interior of the Ambient Breeze Tunnel

Indoor environmental controlled wind tunnel

SPRAY DROPLET SIZING

Meet specified international EPA regulatory guidelines with accurate measurement of spray droplet size. Battelle uses an array of instrumentation to characterize droplet size.

- Malvern Spraytec – laser diffraction
- Artium PDI-200 – phase doppler interferometry
- Oxford Laser VisiSize P15 - particle imaging
- Dantec Dynamics Shadowsizer – particle imaging

Flexible configurations for droplet sizing are possible in the test facility, including concurrent and cross flow winds in low-speed ground-based applications, or high-speed aerial applications.

AMBIENT BREEZE TUNNEL TESTING FACILITY

Battelle's Ambient Breeze Tunnel (ABT), an outdoor test facility located in West Jefferson, Ohio, is approximately 150 feet long with a 20-foot by 20-foot cross section. The facility offers the flexibility to quickly test full-scale sprayers under a range of conditions in a wind controlled environment. Wind speeds ranging from 0 to 5 mph can be achieved in the tunnel. A smaller tunnel (12 x10 ft) can be set up within the ABT to reach wind speeds of up to 15 mph. During this configuration, the ground-based application can be used to measure downwind drift and deposition. Up to 180 mph can be locally generated at the nozzle to simulate aerial

REGULATORY SUPPORT

We utilize computer programs recognized by regulatory authorities (e.g., AgDrift, AgDISP) to assess drift behavior under a variety of climatic and geographic conditions to help you fully understand your risks and accelerate global registration.

TEMPERATURE REGULATED WIND TUNNEL FACILITY

Battelle's indoor recirculating wind tunnel facility has a 6x6-foot working section and is ~95 feet long. We can achieve up to 15 mph wind speeds within the tunnel with less than an 8% turbulence. Laser diffraction equipment is used to characterize particle sizes produced from a given nozzle and formulation. The test facility is focused on improving application practices, which will maximize pesticide efficacy through the use of nozzle selection to accurately determine particle size for reducing drift via tank mix and nozzle combinations.

ENVIRONMENTAL CHAMBER FOR CONTROLLED VOLATILITY STUDIES

In conjunction with Battelle's indoor wind tunnel facility, a 30x20x8-foot environmental chamber is maintained at 95°F and 40% RH to measure the volatility of active ingredients sprayed on soil. Domes are placed on the sprayed soil trays, which are connected to a PUF sampler. All volatilized AI is collected on the PUF, extracted, and analyzed via LC-MS analysis. The chamber can accommodate up to 192 test trays. Three replicate soil trays can be sprayed simultaneously using a track sprayer to provide three replicate tests.

Humidome Testing

Soil Applications

Contact us today to connect with a spray drift expert

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It can be done

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