

Importance of Droplet Knowledge - Bill Reynolds

- a) Why do we calibrate and measure droplets
 - i) Historically, certain products caused paint spotting on automobiles
 - ii) Early research discovered certain drop sizes were more efficacious
 - (1) Too heavy: non-target mortality
 - (2) Too light: no deposition of product
 - iii) Various studies
 - (1) Study in 1970
 - (a) Relationship of minimum lethal dose to optimum droplet size
 - (b) Lethal dose contained in an 18 micron droplet
 - (c) Too large of a droplet wastes product and money
 - (2) Droplet size effects drift
 - iv) Droplet density is the inverse cube of the diameter in microns x 8
 - (1) Smaller droplets waste less product
 - (2) Have a higher probability of impinging on a mosquito - to a point
- b) Benefits of smaller droplet density
 - i) Better kill
 - ii) Better dispersal
 - iii) Less product waste
- c) What are the driving forces now?
 - i) New label language requires info on $Dv_{0.1}$, $Dv_{0.5}$, and $Dv_{0.9}$
 - ii) XF (extra fine) droplet spectrum required
 - iii) Relative span - distribution of droplets in curve
- d) Droplet collection methods
 - i) Spinning impingers
 - (1) Good for ground and aerial
 - (2) Not effective for collecting far field or downrange smaller droplets
 - (3) Biased
 - (4) Various sized slides for different purposes
 - ii) Cascade impacter
 - iii) Silicon
- e) Measuring droplet spectrum
 - i) By eye using a microscope ☹
 - ii) DC-III hotwire
 - iii) DropVision systems