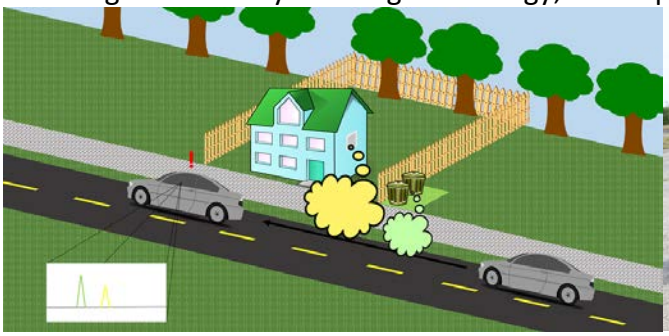
Here at UNT, this research project is both timeless and timely because of the forensic science and legal policy issues presented. With over 9,000 clandestine lab incidents occurring annually, domestic drug manufacturing is on the rise with increasing numbers of labs registered across the country. Since the Controlled Substances Act in 1970, narcotics trafficking has continually evolved as covert manufacturing operations and chemical syntheses have been redesigned to avoid prosecution. Increased border traffic and rapidly changing drug markets means that handheld and mobile instrumentation are a critical asset in combating the international drug trade. Technical and legal issues associated with portable instrumentation to identify clandestine labs implicate the U.S. Constitution's Fourth Amendment on search and seizure including: reasonable expectation of privacy in public and private spaces; reasonable suspicion and probable cause requirements; the exclusionary rule and its multiple exceptions; the admissibility of evidence involving scientifically evolving technology; and expert witness testimony.



The sheer volume and hazardous nature of clandestine labs operating within the United States means reliable, reproducible, and rapid response technology is needed to alert law enforcement and public safety officials about the presence of stationary or mobile lab manufacturing sites. The mass spectrometer provides quantitative analysis needed to identify the location and threat of the lab while minimizing threats to constitutional guarantees. The portable instrumentation presented can be utilized along with other reasonable suspicion and probable cause evidence without violating citizens' Fourth Amendment rights by analyzing the effluent from clandestine laboratories. This novel instrumentation will be utilized in the following phases: Phase one uses the MIMS system in the Mobile Forensic Lab (MFL) to map the EBS associated with Methamphetamine, PCP, Ecstasy, and Fentanyl synthesis to determine the location of the clandestine lab. Phase two will deal with mapping the plume of various chemicals during synthesized clandestine cooks to observe how these chemicals behave based on weather and molecular characteristics. Phase three will be forming a mathematical program to calculate the position of the clandestine lab using variables such as wind speed/direction, humidity, and diffusion. The goal is for this program to be able to back calculate and pinpoint the location of the clandestine lab based on the data received.