Clarke Environmental Mosquito Management, Inc.'s PESP Strategy

Organizational Overview

Clarke Environmental Mosquito Management, Inc. (CEMM) is the nations largest privately owned mosquito surveillance and control company. Founded in 1946, CEMM provides mosquito management services through a refined Integrated Pest Management (IPM) approach termed Environmental Mosquito Management (EMM).

Customers throughout the United States have, and continue to include, State Emergency Operations during hurricane relief and disease epidemics in Alabama, Arizona, Florida, Louisiana, and North Dakota; county environmental and health departments in Georgia, Illinois, New York, Pennsylvania, and Virginia; municipal waste water treatment plants, private industry facilities, and residential sites throughout the country.

The EMM process places an emphasis on proactive pest habitat surveys and mapping, pest population characterization and monitoring, and intensive larval control through computer facilitated biorational methodologies including insect growth regulators and species specific bacteria. The adult mosquito control component of the EMM process involves strategic chemical applications mediated through best practices, including technology such as Global Positioning Systems (GPS), only when established thresholds are reached.

The objectives of the EMM program are to control nuisance mosquitoes, and reduce the potential of mosquito-borne disease transmission - including Eastern Equine Encephalitis, St. Louis Encephalitis, and West Nile Virus - in order to provide a comfortable and healthy atmosphere for community residents.

CEMM continues to advance, encourage, and promote the ideals of IPM and environmental stewardship through a foundation of public and professional education, extensive surveillance-based control strategies, and promotion and utilization of various biological and low risk methodologies. Stewardship, both internal and external, is achieved through participatory and leadership roles in workshops, state and national professional meetings, and Mosquito University - which offers mosquito control professionals comprehensive training programs and continuing education units.

CEMM recognizes and supports the role of research and regulatory entities in maintaining, and sustaining, acceptable IPM methodologies. CEMM actively participates in, and supports, applied research to further enhance the relationship of science-based, EMM surveillance and control methodologies to environmental stewardship.

Describe your Organization's Five-Year Goals Related to Pesticide Risk Reduction

CEMM is challenged annually to provide both internal and external IPM education and training. This is due primarily to seasonal employee turnover and the acquisition of new customers. Information imparted requires consistency and a measure of standardization; this is at times made difficult by a lack of agreement within the literature regarding a precise definition of IPM (Bajwa and Kogan 2002).

Successful integration of IPM information requires a merger of top-down and bottom-up approaches. This has been shown to be the case with integrated vector control programs where community participation and ownership are considered vital to program sustainability (Gubler 1989).

CEMM recognizes the value of a consistent message, delivered through dynamic and varied venues, to the process of ownership. Throughout the U.S. the mosquito surveillance and control community is continually challenged by limitations in the availability of new technology. Reliance upon limited techniques and control tools bear inherent dangers, including but not limited to, insecticide resistance.

During the next five years CEMM expects to continue to define and refine its role as a leader within the service industry. Through active participation in the EPA's PESP Program, CEMM's own EMM program will promote the advancement of pesticide risk reduction. This will take place across internal service office boundaries to include CEMM customers and partners.

What do you envision doing (broadly) to try to resolve your major issues?

CEMM will continue to support risk reduction through a documented internal training procedure. Training will be provided annually in a format that facilitates transfer to both full-time and seasonal personnel of EMM – which has evolved directly from the concept of IPM.

Personnel from CEMM offices across the country will function as both liaisons and leaders of EMM principles associated with risk reduction. Through partnerships, presentations, and printed materials CEMM will consistently promote the value of integrated mosquito and control methodologies.

CEMM will utilize trained and licensed employees to fulfill the requirements of its EMM programs. Pesticide usage consistent with labeled recommendations and regulations is facilitated through education, training, and operator licensing procedures.

Calibration and characterization processes will be complemented with technological advancements in GPS supported application and mapping procedures. Together, these processes and documentation procedures will reduce risk through operational integration of regulatory language associated with pesticide labeling.

Successful initiation and advancement of IPM programs are often challenged by limitations to the insecticidal tools of the industry. Few tools exist; reliance upon a single, or single class of active ingredients is detrimental to the both the incorporation of biological pesticides and the concept of rotation of pesticides.

CEMM will continue to promote and incorporate biorational formulations and practices utilized in conjunction with prescriptive application methodologies. The rotation of suitable pesticides will be promoted throughout the EMM program as vital to the mitigation of resistance mechanisms. Rotational application programs can be used to facilitate entrance of biorational pesticides into existing control programs.

Goal 1 and Tactics

Provide consistent annual education and training on IPM to employees of CEMM including all seasonal hires

Tactic

Take the training presentation and materials utilized in 2007 and amend for incorporation into annual seasonal hire and season kick-off events at CEMM offices.

Success and Measurement

Monitor the number of venues which participate during the next five years, the number of participants in attendance at these events, and the use of a standardized pre- and post-presentation, written quiz.

Goal 2 and Tactics

Incorporate IPM concepts and the principle of pesticide risk reduction within current Mosquito U offerings. Expand the reach of Mosquito U through initiation of new course offering(s) created for the education of both professional and community members.

EPA Involvement

Facilitate through direct or indirect involvement of personnel to the development and delivery of course offerings, support through EPA grant programs, and/or access to various materials. Explore potential to offer Mosquito U/aspects of to/within EPA educational venues.

Tactic 1

Create new IPM module to incorporate within current course offerings; base on presentation and materials from Tactic 1.

Tactic 2

Develop mosquito surveillance and control Mosquito U offering that integrates risk reduction theme for use in Mosquito U and Mosquito U-like venues to professional and community participants.

Success

Create and implement educational offerings with risk reduction components, available through established and alternative venues.

Measurement

1. Compare and contrast numbers of people reached and continuing education credits provided with that of past Mosquito Universities.
2. Utilize assessment materials to promote feedback and advancement of educational initiatives.

Goal 3 and Tactics

Evaluate and promote the relationship between operational calibration and characterization of application equipment and application risk reduction.

Tactic

Evaluate current calibration and characterization education and training procedures, in conjunction with evaluation of current calibration and characterization processes. Include both internal and external customers. If necessary, utilize to incorporate appropriate pesticide risk reduction information and amend procedures and processes.

Success

1. Evaluation of current training and practices can be both assessed and modified if necessary during the current year.
2. Initiation and incorporation of enhanced standards, if necessary, can be monitored over the next five years.

Measurement

May be determined through training assessment procedures including but not limited to post-training quiz and application records audits. Data obtained through calibration and characterization can be compared and contrasted temporally with application records to measure potential risk reduction.

Goal 4 and Tactics

Continue to incorporate and expand the utilization of biorationals within EMM programs across the company's scope of services.

Tactic

1. Evaluate the current use of biorationals, including but limited to utilization of mosquito eating fish and microbials within EMM programs.
2. Evaluate current mechanisms used to promote utilization of biorationals, to both internal and external customers and partners.

EPA Involvement

1. May facilitate through PESP logo support on brochures and other print materials related to use of biorationals within EMM programs.
2. May enhance PESP web links to CEMM biorational materials.
3. Grant monies related to biorational initiatives within community based surveillance and control programs, including but not limited to applied research or evaluation of community perception.

Success

1. Support and use of biological control mechanisms.
2. Expansion and incorporation of available mechanisms.

Measure

1. Creation of materials related to promotion of biorational tools as control agents and rotational mechanisms used to mitigate pesticide resistance.
2. Sustained and enhanced use of biorationals within CEMM service operations.
3. EPA funded biorational initiative: survey of community-based perceptions, biorational brochure, web-based informational materials.
4. The integration of complementary procedures and technology provides customers, operators, and supervisory staff the ability to make and document application decisions within the law of the label.

References

Gubler DJ (1989) *Aedes aegypti* and *Aedes aegypti*-borne disease control in the 1990s: top down or bottom up. American Journal of Tropical Medicine and Hygiene 40:571–578

Bajwa, W.I. and M. Kogan. 2002. Compendium of IPM definitions (CID) - What is IPM and how is it defined in the Worldwide Literature? IPPC Publication No. 998, Integrated Plant Protection Center (IPPC), Oregon State University, Corvallis, OR, 97331, USA

The scientific literature highlights part of the difficulty in attempting to relay and maintain this foundation: more than 64 IPM definitions exist (Kogan and Bajwa 19).

Additional information on organization involvement and objectives

Through employee, customer, and industry educational and training opportunities we will deliver information consistent with the reduced risk goal of the EPA's PESP Program.

CEMM will continue to incorporate and sustain the concept of IPM and the precepts of the EPA'a PESP program within its own EMM programs. The Director of the Environmental Sciences Department will work with the management of CEMM to annually improve IPM education and training. CEMM will promote individual ownership of the ideals of IPM throughout the company to include personnel other than those directly involved with implementation of surveillance and control methodologies, and will include all seasonal employees.

Environmental Sciences will assist CEMM in the education of both internal and external customers through the development of brochures and presentations. This will include the creation of new Mosquito U course offerings and continued modifications to existing courses. Mosquito U offers continuing education credits to licensed professionals throughout the US. The development and continued use of education and training have been identified throughout the mosquito surveillance and control industry as having the potential to makes great strides in pesticide risk reduction.

The incorporation of biorational pesticides will continue to be a priority within EMM programs, and their potential for use will be conveyed to existing and potential customers through brochures and presentations. Educational outlets, including but not limited to Mosquito U for the homeowner, will be explored.

Finally, the application of pesticides by licensed professionals utilizing properly calibrated and characterized, state-of-the-art equipment and technology will remain the company standard. Proactive, prescriptive techniques following CEMM models of mosquito ecology and behavior, cartography, and customer expectations will applied in accordance with the language and recommendations of pesticide labels.