

## DELAWARE MOSQUITO CONTROL SECTION

### **FAQ #5. Are mosquito control insecticides safe to use, and should I be concerned if I'm exposed to spraying?**

The Mosquito Control Section **only uses insecticides that are registered by the U.S. Environmental Protection Agency (EPA) for mosquito control purposes.** The EPA has determined through an inclusive and exhaustive science-based testing and review process that when these modern insecticides are applied in accordance with all EPA-approved product label instructions, which by federal law must be followed, their application **“poses no unreasonable risks to human health, wildlife or the environment.”** The EPA’s review process now typically entails that a pesticide manufacturer must spend almost 10 years and from \$30-\$50 million dollars, and sometimes up to \$100 million, in testing before being allowed to bring a new product to market, and also has to invest significant resources in keeping an existing pesticide re-registered for continued use, all which is given careful scrutiny and review by the EPA. In part, the types of testing done include exposures and reactions of birds and mammals to ingested, inhaled or dermal contacts with a pesticide; as well as examining acutely toxic and sub-lethal chronic effects of pesticide exposures to fishes, reptiles and amphibians, and terrestrial and aquatic invertebrates (with various types of tests done on adults, juveniles, and larval or other immature forms).

The hazardous warning statements and other safety precautions that appear on **pesticide product labels** are often a source of concern to folks who do not understand their context or applicability, and as such sometimes present public relations problems for our program. It must be kept in mind that the EPA-approved warning or precautionary language on product labels is targeted primarily toward avoiding having a human or other type of organism have direct exposure (through ingestion, inhalation or dermal contact) to full-strength, undiluted products, as well as what to do if such exposure has occurred. The product label language is also of primary utility to the spray applicators themselves, who most frequently might routinely or accidentally have such exposures. It must be understood that the final application of insecticides during our routine spray operations is always done via a mode of delivery approved by the EPA, with applications made at concentrations that are either always very diluted or at Ultra-Low Volume (ULV) rates, and which are not done very frequently for any given site. As such in real world use, these application conditions have allowed the EPA to scientifically conclude that when all product label language and instructions are followed as federal law requires, use of our mosquito control insecticides **“poses no unreasonable risks to human health, wildlife or the environment.”**

As part of the Delaware Department of Natural Resource and Environmental Control (DNREC) within the Division of Fish and Wildlife, the Mosquito Control Section is of course very concerned that **there are no unacceptable non-target impacts** (to humans or fish and wildlife) whenever we must conduct our spray operations. The first generation of modern insecticides arose in the 1940’s, which included long-lasting products like chlorinated hydrocarbons (e.g. DDT), and whose environmental persistence

unforeseeably might have led to some problems for some higher-order consumers, has now been replaced by much shorter-lived second and third generation modern insecticides.

As a sidebar before moving onto a discussion of our more modern second and third generation insecticides, it should be noted that the often touted story of adverse impacts from DDT's use, supposedly in part manifested in drastically reduced populations of bald eagles, ospreys, falcons or pelicans allegedly occurring via egg-shell thinning and reproductive failure, actually has only weak scientific underpinnings along with some scientific evidence to the contrary, with the historical declines and rebounds for these avian populations also being reasonably attributable to several other factors not related to pesticide exposures. This may come as a somewhat surprising revelation to some folks, in that the DDT/bird decline story has now become so well engrained in "popular wisdom" or lore, but this scenario's perpetuation in unchallenged manner really does a disservice to good science. A history over the past 45 years of people unknowingly frequently repeating this somewhat dubious set of events and impacts (often done with some passion and conviction on the part of the tellers) has taken on a life of its own, with this supposed scenario then morphing into "the truth," which in large measure then conforms to what some or even many people want to believe. However, exploring this matter in any balanced manner and warranted scientific depth would be the subject of a whole another review beyond these FAQs.

Even with the DDT/bird decline story not holding up real well to more objective and less impassioned scientific scrutiny, this is not to say that all concerns about the potential for yet unknown or poorly-understood non-target impacts, even when products are used in strict accordance with all EPA-approved label instructions, have completely faded for all modern insecticides – e.g. in the last several years concerns have arisen about potential endocrine system effects ("endocrine disrupters") associated with certain types of pesticides (or with their accompanying synergists or other additive ingredients), which probably bears objective tracking and further scientific inquiry. However, it is fairly safe to say that the benefits of **judiciously** using modern-day pesticides to help meet important societal needs (e.g. mosquito control, rodent control, disease prevention, crop production, food storage, timber production, structural building protection, landscaping needs, etc.) far outweigh any known risks **for EPA-registered products**, since the EPA's product registration or re-registration process over the past 35 years has taken almost all previously-used "bad actor" pesticides off the market, and has not knowingly let any new "bad actor" products into the market.

As such, in today's era of heightened environmental concerns, almost all remaining potential problems for human health or non-target organism impacts caused by mosquito control spraying primarily arise from human mistakes or application errors that might be made in the rate of application (e.g. spray equipment calibration errors), the timing or place of application (e.g. accidentally repetitively swathing the same area), or with other operational aspects of performing spraying (e.g. spraying when too windy or not windy enough), all which can be readily avoided when product label instructions are scrupulously followed, and applications are made by dedicated, trained professionals.

Mosquito Control Section staff and our contractual spray applicators are all knowledgeable professionals **certified by the Delaware Department of Agriculture** for using insecticides in proper and safe manner.

In wrapping-up our comments about this FAQ, it should be noted that a very small segment of the public might be **hyper- or chemo-sensitive** to the insecticide products that we use (as well as perhaps also adversely reactive to other types of chemicals in the environment), particularly for our adulticides for which people are much more likely to be exposed in contrast to our larvicides. Such hyper- or chemo-sensitive individuals might experience allergic-like reactions to our spraying, perhaps consisting of irritated eyes or throat, sneezing, coughing or other mild symptoms. If you experience such discomfort during or immediately after a mosquito control spraying, then you're unfortunately one of the very few who might well be concerned about exposures to our treatments. In the unusual event that you are experiencing adverse health effects following insecticide application, you should consult your personal physician or seek other medical care. You will also find information in FAQs #6 and #7 that should help you (and us) better contend with your individual problem, including how to avoid exposures to our spraying.

More information about the insecticides we use and their safety can be found on the **Mosquito Control Section's** website at <http://www.fw.delaware.gov/Services/Pages/MosquitoSection.aspx>. The phone number to contact the **Section's administrative headquarters** in Dover is **302-739-9917**. If you want information about the State of Delaware's pesticide oversight/regulatory program, you should contact the **Department of Agriculture's Pesticide Compliance Section** in Dover at **302-698-4500**. If you have questions or want more information about any possible human health impacts of exposure to our insecticide products, you can call the **Division of Public Health, Environmental Health Evaluation Branch** in Dover at **302-744-4546**. Information about the **U.S. Environmental Protection Agency's (EPA)** positions on mosquito control insecticides can be found on the EPA website at <http://www.epa.gov/pesticides/health/mosquitoes/>. The Mosquito Control Section is also a participating affiliate of the **American Mosquito Control Association (AMCA)**, and the AMCA in turn participates in the EPA's **Pesticide Environmental Stewardship Program (PESP)**, which encourages safe use and good stewardship of our insecticide tools – more information about the AMCA and its PESP partnership with the EPA is available on the AMCA's website at <http://www.mosquito.org>. Information about non-target impacts of pesticides can also be found at the **EXTOXNET** website (a consortium of academic research institutions) at <http://www.ace.orst.edu/info/extoxnet/>.