Mosquitoes and Bio-terrorism

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Typically, when you meet someone for the first time the main conversational piece is about what you do. So, when I first meet someone and they ask me what I do, I tell them I work for mosquito control. The reaction to this statement is usually quite interesting. Depending on what they know about mosquito control determines their reaction. Most people are only concerned with eradicating mosquitoes, because they see them as a nuisance. The problem is many individuals do not realize there are many more issues then just killing mosquitoes. One major concern for mosquito controls nationwide is the threat of bio- terrorism.

Bio-terrorism has recently become a major risk to our nation. Bio-terrorism is the threatened use of microorganisms or toxins to produce disease or death (Altruis Biomedical Network, 2002). There are many potential toxins that can be used for bio-terrorism According to the Centers for Disease Control and Prevention there are multiple ways humans can become infected by these biological agents, which include: inhalation, ingestion, and penetration (2004). Bio-terrorism agents can be odorless, colorless and sometimes invisible.

There are many agents that can be considered for bio-terrorism, from the widely discussed anthrax agent to smallpox or even yellow fever. The dispersion of these agents is the main problem for mosquito control. According to the American College of Physicians, the agents can be dispersed in two ways, either by a point or line source

(2003). Point source is directly sending the agent to an individual; line source spreads the agent by the use of a spraying device.

Within a mosquito control agency there are various programs used each year. Beginning in the springtime there is the spring aerial treatment program. This program is designed to reduce mosquito populations by spreading chemical through the use of aerial machines, such as a plane or helicopter. A granule or liquid form of chemical is dispersed over local water.

The second program used by most mosquito control organizations is the summer larviciding. This is the treatment of breeding water through the use of various chemicals, distributed by an individual to that particular water source. Also, at this time there is summer adulticiding. Adulticiding takes place at night when adult mosquitoes are most active. A machine is used to spray the control material into the air, killing the adult mosquito.

Within each of these methods used for mosquito control, there is the potential for bio-terrorism. When aerial treatment is used, thousands of acres are treated with chemicals each year. The potential danger is a mass distribution of harmful agents. If an individual were able to replace the chemical used for treatment with a dangerous chemical many problems could occur. First of all, this would allow for a huge quantity to be dispersed over an entire area in a relatively short amount of time. There is also the potential danger of infecting the area water systems, because the chemical is being dropped directly into

water, allowing the chemicals to be released into the water spreading into lakes, streams, and even drinking water, and causing the possibility of ingestion by humans and animals.

The next threat for bio-terrorism is through larviciding. There are multiple chemicals used when larviciding. If someone were able to get into any one of these chemicals, dangerous biological agents could be spread. Many times while larviciding the worker comes in direct contact with the chemical. This could cause the worker to become infected by the biological agent. There is also the same threat as aerial treatment, with the spread of infection throughout the water.

Finally, there is the threat of adulticiding. While adulticiding, the control material is sprayed directly into the air. The use of this treatment is also very widespread. Each night chemical can be sprayed over hundreds of miles. The treatment is done in residential areas. The chemical sprayed could come into contact with thousands of individuals each night. This could allow hundreds to thousands of individuals to inhale hazardous chemicals unknowingly each night.

Since there are so many risk factors when working with mosquito control organizations, there needs to be implementation of prevention tactics. There is a potential risk for the individual workers working with these chemicals, and for the area population to become infected. To prevent bio-terrorism within an organization many changes must be made.

First off, there is a need for safer shipping methods of chemical. Companies shipping chemicals to other organizations must know exactly what is being sent, the weight of what is being sent, and when and where the chemical is going to arrive. Chemicals received by other companies should be tested by organizations to make sure the material has not been altered.

Next, the security of the product must be increased. Organizations should know who has been in their buildings, and when. Supervisors should know what chemicals individuals are using and where. Another way to raise security would be through the use of surveillance. This would allow organizations to keep track of exactly who is around their materials at all times.

Another issue that mosquito control organizations need to address is the safety of their own employees. Individuals working with chemicals should be given proper safety equipment. The proper use of equipment should be discussed. With the use of safety equipment the risk of self-infection can be reduced. Gloves, long sleeves and safety goggles should be worn at all times, not only for protection against the daily control materials used, but as a preventive measure in case the material has been tampered with.

There are many concerns that go along with any work organization. Usually, when people think about mosquito control they do not consider all the risks that are involved. Most people would not even see the threat of bio-terrorism with mosquito control, but as it has been shown the potential danger is there. Although, these problems have never

occurred, it does not mean that they never will. By using the prevention methods suggested the threat of bio-terrorism and mosquito control can be greatly reduced.

As an individual that has worked for mosquito control I can say that most, if not all of these prevention methods are used daily. It is important for the public to know that not only is the nuisance of mosquitoes being taken care of by the local mosquito control. But, there are also many other concerns these organizations work at fixing each day.

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