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## Using Cockroach Gel Baits

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*Recently, cockroach gel bait formulations have improved due to their efficient non-repellant active ingredients, highly attractive and palatable food ingredients, as well as their high moisture content.*

A typical summer morning rolls around and you take a call from a prospective customer who has a problem with cockroaches in their home. After a series of questions you determine that it is likely that this individual has an infestation of German cockroaches. You (or another company employee) heads out later that morning to perform an inspection and hopefully start a new service. This all may have been standard operating procedure at your place of business for some time, however, I think it's fair to say that the way you may go about eliminating the pest problem at that new account may have changed quite a bit in recent years. One of the major factors influencing this change is the effectiveness and increased usage of cockroach gel baits.

**Baiting History.** Being an avid outdoorsman, I have always enjoyed hearing (and telling) hunting and fishing stories. I also enjoy talking with retired or "senior" pest control operators and hearing about their "good old days." One of my favorite pest control stories, told by Zeno Welborn, a retired pest control manager, begins when Zeno was still a young man and starting a new service route in the northern Piedmont area of North Carolina. It seems that Zeno had a lead from one of his residential customers that a knitting mill in the area where this customer worked had a major problem with cockroaches. Apparently in those days there were no "No Smoking" or "No Chewing of Tobacco Products" in the work place rules. In fact, at this particular mill, a large percentage of the employees chewed tobacco.

Zeno went on to say that at just about every work area there was at least one spittoon and trash can used as a secondary deposit site for excess tobacco juice. Around each of these areas he found pocketed infestations of German roaches. But the big complaint wasn't from the presence of German roaches but from the nuisance of the other "big roaches" that were around. After a little investigation Zeno found that there was a high crawlspace under the entire factory which was teaming with American cockroaches. It just so happened that he had recently received some phosphorus paste bait and thought that this would be a good place to try it out to see how it worked.

Armed with a bucket of phosphorus paste and a putty knife, Zeno made his way under the factory. Each of the support posts and every drain line was teaming with American cockroaches. Zeno said that when he would start to smear some of the bait on a support post that the cockroaches would literally start running to the bait. He said that the roaches would even eat it off of his putty knife while he was holding it. A few days later Zeno was back on site at the knitting mill and was surprised to see dead cockroaches littering the floor. He noticed one barely kicking and being a

true-blooded pest control operator, proceeded to stomp it. When he did he said a little puff of smoke rolled out from under his boot. At the time, as an up and coming pest control operator, I can just imagine what it would be like to have cockroaches literally eating out of your hand and smoking after you "stomped 'um."

Little did I know that when I heard this story that I would soon be holding a bait gun and leading German cockroaches around in circles, or watching American cockroaches climbing over each other to get to one of the new cockroach gel bait formulations. Our industry truly has a rich history and even though some of the older cockroach bait formulations delivered some impressive results, modern cockroach gel baits have many positive attributes that far exceed their predecessors.

**An Effective Bait.** Throughout history, man has battled cockroaches and attempted to find the most efficient way to win. Being cryptic in nature (spending most of their time in hiding), the cockroach has managed to coexist and thrive efficiently with man. One of the many tools used in fighting this battle (especially in recent years) has been modern cockroach baits.

Cockroach baits that are currently available include such formulations as granular, pelleted, containerized, pastes and gels. In development of an effective cockroach bait formulation, a researcher must take a number of points into consideration. These include such things as the bait having an attractant that will "draw" the cockroach to investigate a possible food source. Once the cockroach is at the site of the bait placement then it must find the bait attractive enough to further investigate and possibly consume it. The cockroach has a number of sensory abilities that enable it to either accept or reject a potential food source.

Even though they don't "smell and taste" as humans do, roaches are equipped with highly developed sensory organs in the antennae, palps and mouthparts that assist them with selecting a suitable food source. Essentially, the bait must "taste good" to the cockroach and contain an active ingredient (a.i.) that is non-repellent. In recent years the industry has seen increased efficiency in using cockroach gel bait formulations due to these products using efficient non-repellent active ingredients, highly attractive and palatable food ingredients, as well as having a high moisture content.

**Product Summary.** Currently there are several excellent cockroach gel bait products available for the pest control industry to select from. In the near future PCOs should also expect to see additional gel bait formulations and application delivery systems coming to market. The following is an overview of current cockroach gel bait products available to the PCO.

- **Avert Gel by Whitmire Micro-Gen**

According to Dave Naffziger of Whitmire Micro-Gen Research Laboratories, one of the most unique attributes of the Avert gel bait formulation is the a.i., abamectin. This a.i. is unlike other cockroach baits in that it is derived from a naturally occurring fungus, which results in a unique mode of toxic action to the cockroach. The active kills cockroaches by acting as a "gabba blocker." Since this is a highly efficient and different mode of action from many other insecticides, there is a decreased likelihood of cockroach populations developing resistance.

Whitmire Micro-Gen has recently introduced an enhanced formulation of its Avert gel bait that has an increased level of protein. This new formulation results in increased cockroach feeding and bait consumption. Another unique feature of the Whitmire Micro-Gen gel product is its availability in a pressurized can delivery system. Avert is available in two sizes of "piston cans," which use a nitrogen-based propellant. Unlike traditional aerosol cans, the "piston cans" will work properly regardless of the position in which they are held during application. Avert gel is also available in a 30-gram reservoir size for use by PCOs who prefer using one of the bait application devices that are available.

- **Maxforce by Clorox Co.**

According to Gordon Morrison, product manager for Clorox, "Maxforce holds the No. 1 market share for the gel cockroach baits in the structural pest control industry." Maxforce's product was first offered for sale in the containerized form by American Cyanamid in the mid 1980s. The Clorox Company purchased the rights to the product and produced the Maxforce gel bait formulation containing the a.i. hydramethylnon. Throughout the next several years the industry saw increased usage of this product and the introduction of several other gel bait products by different manufacturers.

The Maxforce formulation was modified to increase feeding acceptance of cockroaches by replacing the glucose attractant with fructose. In the past several years the hydramethylnon a.i. was replaced by fipronil in order to deliver a faster kill. This resulted in a product delivering a 50 percent mortality in cockroach populations within the first 24 hours and an 80 to 90 percent mortality within 48 to 72 hours. The fipronil formulation is currently marketed under the Maxforce FC label. Recently Clorox has announced the reintroduction of the hydramethylnon formulation (*see related story on pg. 16*). This proven product requires a longer time period to achieve the mortality levels of the fipronil formulation but provides an alternative for PCOs who prefer the previous hydramethylnon formulation.

- **Pre-Empt by Bayer Corp.**

The most recent cockroach gel bait product that has been introduced to the pest control industry is Bayer's Pre-Empt, containing the a.i. imidacloprid. According to Bayer, "This new cockroach gel bait is non-staining to clothing, won't run when exposed to temperatures up to 130 degrees Fahrenheit and has superior adhesion properties. Pre-Empt will stay right where you put it, even on ceilings." The appearance of the bait itself is white in color, which also offers some benefit in certain application situations. Dr. Gary Braness of Bayer also states, "We've documented quick bait acceptance, high levels of efficacy and a very unusual two-year effectiveness of the product in actual use."

- **Pro-Joe-S Roach Bait/Gel Formula 15 by Blue Diamond Mfg. Co.**

According to Bill Stapleton, founder of Blue Diamond Mfg. Co., it was not his original intention to enter into the pesticide manufacturing and distribution business. Stapleton was a PCO who had a large number of multi-family housing accounts and needed an effective product that his employees could work with and consistently achieve satisfactory results under the adverse conditions present in many of these accounts. When his employees delivered good results using the cockroach paste bait that Stapleton developed, the phone started ringing for requests to purchase the bait by both the public and other PCOs.

Today, the company manufactures and distributes its original boric acid-based paste bait as well as their latest introduction into the marketplace, Pro-Joe-S Bait/Gel Formula 15. According to Stapleton, "Pro-Joe-S is a high-moisture content gel formulation, which contains saturated fats, carbohydrates, sodium, proteins, vitamins and calcium. It does not run or drip when applied and stays where it is placed." This new product is also a boric acid-based active packaged in 30-gram reservoirs, compatible with most of the current gel bait application devices.

- **Siege by American Cyanamid**

As stated earlier, American Cyanamid originally owned the Maxforce cockroach bait line using a hydramethylnon active ingredient. In recent years American Cyanamid has introduced Siege Roach Gel bait with a hydramethylnon active. One advantage American Cyanamid feels it has over other cockroach gel baits (in addition to an attractive and effective product) is the Xactadose

Precision Baiting System baiting device. This application device is designed to deliver consistent precise "doses" of Siege cockroach gel for each bait placement. The Xactadose application device is designed to hold the 100-gram size bait tubes in a "closed handling system" that results in the reduction of potential applicator exposure to the bait itself. American Cyanamid also produces Siege gel in a 30-gram "flex-syringe" that is designed to be used by PCOs who prefer to use other cockroach gel bait application devices.

**Treatment Techniques.** Many in our industry know about the need for inspection and Integrated Pest Management principals. However, they seem to have a fixation on applying pesticides. This concern also applies with the use of the cockroach get baits. I know that some of the application devices "look good" and have neat holsters and belts. Regardless of the pesticide or pesticide formulation that is being used, the pest management professional should stick to practicing the fundamentals of IPM. This includes evaluation and implementation of a combination of varying control techniques. All pest control professionals should consider implementation of all practical non-pesticidal alternatives before making (or in conjunction with) pesticide applications. This may include such things as a combination of cleaning, vacuuming and sealing followed by bait placement if and where they are needed.

Gel bait products will maintain their attractiveness for a varying period of time. If there is no indication of cockroach activity through customer interviews, monitoring and inspection evaluations, then it is likely that there will be no need to make a pesticide application. I have gone into commercial businesses where excessive and sloppy cockroach gel bait applications have been made. All gel bait products should be applied following the labeled instructions and in such a manner so that visible residues are inaccessible and out of site. I have also gone into "baited accounts" and found active infestations of German cockroaches. The bait placements simply weren't made in proper quantities, locations and frequency. One of the keys to cockroach baiting success is to get small multiple placements into cockroach harborage or hiding places. This makes sense if you consider that the vast majority of any cockroach's life is spent hiding in cracks and crevices.

Currently, several different application devices are available for use with the differing cockroach bait gel products and each has pros and cons, varying from consistent performance, ease of use and its price tag. You should closely evaluate your application needs, pricing of application devices, guarantee with the devices and personal preference when selecting a bait application device. The key objective is to be able to get delivery of a controlled amount of the gel bait to the desired site. All of the gel bait labels refer to multiple placements of the products. This is simply an effort to maximize your potential effectiveness with any baiting situation. Cockroaches are often opportunistic feeders and will not typically travel long distances in order to investigate any food source. By using small multiple bait sites that are strategically placed, the odds of cockroaches encountering and feeding upon the bait are increased. You also need to always keep in mind that there are numerous "microhabitats" or small areas within most accounts that are especially attractive to cockroaches. Locating these preferred harborage sites and making direct bait placements in these areas will also maximize your efforts. You may have a need to disassemble equipment to create access to properly clean and treat the preferred sites.

Following the application of a gel bait where there is known or suspected cockroach activity, the technician should plan on scheduling a reinspection so that he or she can reevaluate treatment effectiveness and any additional needs. PCOs should be cautious in assuming that "there is plenty of bait in an account." Since cockroach infestations can be "pocketed," there may be localized populations of cockroaches that have consumed all of the bait where they are living while there are still bait placements in other areas that haven't been fed upon. If these "pocketed" infestations are not rebaited then the account will likely continue to have a cockroach problem.

**Conclusion.** I was once conducting a training seminar where I held up a brown paper bag and told the audience that inside this bag contains the "silver bullet" that will cure all of their ant and roach problem accounts. Everyone perked up quiet a bit and seemed to pay closer attention as

they waited for me to show them this "cure-all." Finally at the end of the session, when I still hadn't shown them what was in the bag, one of the technicians "took the bait" and asked, "Aren't you going to show us what's in the bag?" I then responded by opening the bag and showing them that it was actually just an empty bag.

My point from this illustration was to simply say that there isn't a "silver bullet" or single "cure-all" out there. In order to maximize our pest control and elimination efforts, we must use all of the tools and pest management techniques that are available to our industry. Fortunately, we now have a highly effective and welcomed addition to our "pest management arsenal" with cockroach gel baits.

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#### **SIDEBAR:**

#### **THE PROS AND CONS OF COCKROACH GEL BAITS**

##### **Pros:**

- + Little to no odor
- + No drift
- + Effective
- + No mixing
- + Low toxicity

##### **Cons:**

- Many are heat sensitive
- Some may run or stain
- Varying length of maximum attractiveness
- Accumulation at treatment sites
- Requires multiple placements
- Wide variability in delivery from various application devices

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