

German Cockroaches & Their Treatment Protocol



German Cockroaches

- 1/2 - 5/8" long
- Light tan to light brown color
- Two distinct parallel lines the length of the pronotum; "racing stripes"
- Wings longer than abdomen
- Do not fly
- Will live in areas that provide them with humidity, food, and water source
- All developmental stages live together in same area (they are not social insects)
- Mainly active at night
- During the day, they remain concealed in cracks and crevices unless they are over-crowded



German Cockroaches

- First and second instars feed on fecal matter, dead insects and regurgitated material found in their harborages-risky to leave
- Older nymphs and adults forage and feed regularly
- Females who are pregnant (gravid) do not feed; they seek harborage while the ootheca is attached. Once the ootheca is dropped, she will engorge herself on food available



German Cockroaches

- Contaminate food and food products with feces and defensive secretions
- Physically transport and often harbor pathogenic organisms
- Studies have shown they can cause severe allergic responses in children



German Cockroaches: Non-Chemical Control

(the first step in preventing a German roach infestation)

- Storing food in cockroach-proof containers
- Empty trash frequently
- Pick up pet food
- Reduce the food sources
- Reduce harborage areas
- Eliminating stockpiled shopping bags
- Eliminating clutter
- Ensuring Customer with heavy German roach population prepares for a “clean out” per Massey’s “German Roach Elimination Service Checklist”

A Checklist is Always Given to a Manager or a Homeowner

- Discuss and review each item on the checklist with those in charge of preparation prior to the treatment
- DO NOT TREAT until everything on the checklist has been prepared properly

German Roach Elimination Service Checklist



To complete a German Roach Elimination Service, the property must be properly prepared for service. The following outline reviews the steps that must be taken in preparation for the service.

CUSTOMER PREPARATION (Review each step and have customer initial PRIOR TO SERVICE)

- ___ Remove all items from kitchen cabinets and drawers. Discard any infested items that cannot be cleaned.
- ___ Vacuum any dead roaches out of the cabinets and drawers – these serve as a food source for the remaining roaches.
- ___ Clean crumbs, grease and food residues from under and behind the stove, including the stove sides and under the burners.
- ___ Eliminate all open food sources. Place the contents of open boxes in sealed containers. This reduces the competition between foodstuffs and roach baits.
- ___ If pet food is left in bowls during the day, or overnight, during the elimination period reduce the amount of food placed into dishes so pets consume all the food. Once all the food is consumed clean the floor and bowl. Even the smallest amount of pet food crumbs can become a roach feast!
- ___ Vacuum or sweep the rest of the home to remove food debris including dead roaches. When roach activity is found in rooms other than the kitchen, remove all items from storage, vacuum inside the empty closets, cabinets and drawers and then replace items.

SERVICE (After preparation is complete, the Massey's Service Technician will:)

- ___ Treat all areas with extra attention to sensitive areas and locations with high activity, (Follow Massey German Roach Treatment Protocol)
- ___ Place Massey Insect Detection Traps or roach pheromone detector traps inside cabinets, drawers and behind appliances.
- ___ Complete the Customer Service Report including recommendations to assist in preventing roaches from returning.

*CHECKLIST ITEMS THAT HAVE NOT BEEN COMPLETED WILL BE CIRCLED BY THE TECHNICIAN AND THE ELIMINATION SERVICE WILL BE RESCHEDULED.

AFTER MASSEY'S SERVICE:

- ___ Vacuum or clean up dead roaches daily. Check the cabinets, drawers and along baseboards.
- ___ Keep food in sealed containers. Empty trash daily.
- ___ Remove all food competition for roach bait. Keep counters, sinks and floors free of food debris. Until roaches are completely gone be sure that all dishes are washed and out of sinks and the counters are wiped clean.
- ___ Do not disturb bait placements, monitor traps or other materials. These will continue to work for weeks after the initial treatment.

This initial service will eliminate the majority of the German roaches in the property. To assure results and address expected hatching of egg capsules a seven day follow up inspection will be scheduled. Additional treatment will be provided as required. As required the technician may schedule additional seven day follow up visits.

All products used in these services are performed in accordance with EPA approved label instructions, as well as applicable Federal, State and local laws.

Should you have any questions, please contact our Service Center _____ () _____

Service Technician/Sales Inspector _____ / Date _____ Customer _____ / Date _____

German Cockroaches: Treatment

- Flushing with PI
- Inject into cracks, crevices or voids where roaches are harboring
- Short 1-2 seconds bursts
- No residual; will only kill what it contacts
- Will damage varnished/stained cabinets
- Use in conjunction with HEPA-filtered vacuum



German Cockroaches: Treatment

- HEPA-filtered vacuum
- Immediately remove roaches you are flushing from harborage areas
- Dramatic impact on the roach's environment by removing live and dead roaches, cast skins, egg cases and minor food debris
- Immediate decrease of population
- Helps in preparation for other control methods
- The impact of pest prevention measures is more significant due to decreased numbers
- Customer sees an immediate result from your treatment



German Cockroaches: Treatment

- Dust
- Apply to void areas where liquid is not an effective treatment option
 - Wall voids, between built-in cabinets and walls or floors, etc.
- Long lasting effects, kills gravid females
- Can act as a stomach poison
 - Roach walks across treated area and dust adheres to its cuticle (“skin”) and ingests when it grooms itself
- Can act as a desiccant
 - Absorbed through and dries out the insects cuticle



German Cockroaches: Treatment

- Liquid residuals
- Product selection dependent on Material Rotation Chart
- Applied with small, compressed air sprayer
- Use as a crack & crevice treatment and spot treatment
- Not to be used as an area treatment
- Can be used in conjunction with other control methods
- Never apply a liquid product where baits have been applied, (except Phantom)
- Liquid residuals used in the vicinity of baits will repel cockroaches from the bait



German Cockroaches: Treatment

- Dust and liquid residuals work primarily through direct contact
- Knowing the habits of German roaches, would this type of treatment (stand-alone) be the most effective?
 - No, remember that young nymphs and gravid females stay hidden
 - They may never come in contact with the dust or the liquid
- Let's use their biology and habits against them
 - Let affected roaches bring the active ingredient back to areas of harborage
 - Secondary kill

German Cockroaches: Treatment

- Baits contain attractants or feeding stimulants and an active ingredient
- Roaches ingest baits containing the active ingredient
 - Not all of the active ingredient is absorbed
 - Some is passed through the digestive tract and excreted
 - Right before roach dies, it will regurgitate (with some active ingredients)
- Other roaches in area will:
 - Feed on the feces containing the active ingredient
 - Feed on the regurgitated materials containing active ingredient
 - Feed on the dead insects containing the active ingredient



German Cockroach: Treatment

- Will travel 10-12 feet for food source
- Apply to cracks and crevices, kitchen appliances, under sink, cabinets and other harborage areas
- Do not apply to open areas where people or pets may come in contact with them
- Never apply a liquid product where baits have been applied
- Liquid residuals used in the vicinity of baits will repel cockroaches from the bait



Why do we rotate products for German cockroach treatments?

- To decrease the chances that the following will occur
 - Resistance
 - Bait Aversion
- Rotation of products helps to keep the effectiveness of the treatment program intact.

Resistance or Bait Aversion

- Resistance
 - Change in the susceptibility of a pest population to an active ingredient or class of pesticide
 - Results in the failure of a correct application to control the pest
 - 2 factors responsible
 - Genetics
 - Intensive and/or continuous application of same product/product class
 - Can develop to a specific pesticide/active ingredient, but most likely will occur with all pesticides within the same class (active ingredients are different but all have same mode of action)

Types of Insecticide Resistance

- Metabolic resistance
 - Most common type of resistance
 - Insects may destroy or detoxify the active ingredient or prevent it from reaching the target site
 - Binds to proteins in their bodies
- Altered target site resistance
 - 2nd most common type of resistance
 - Site where the active ingredient binds has become modified
 - Reduces the effects because it's not able to bind correctly

Types of Insecticide Resistance

- Behavioral resistance
 - Resistant insects detect and avoid the applied product
- Penetration resistance
 - Resistant insects absorb the toxin more slowly than susceptible insects
 - Cuticle develops barriers which slow absorption of the active ingredient into the body

Resistance or Bait Aversion

- Bait Aversion
 - Behavioral response to the food attractant contained in a bait
 - Avoiding a bait formulation that the insect would previously consume
 - Some researchers believe cockroaches will avoid the food attractant because they associate the smell with the bait (something bad)



Bait Aversion

- Studies have shown an aversion to glucose in baits by some populations of German cockroaches
- Roaches do not consume the bait, so they do not ingest the active ingredient



Fighting Resistance

- Liquid Residuals
 - 3 Liquid Residuals
 - Rotated every 4 months
 - 3 different active ingredients
 - 3 different chemical classes/modes of action



Fighting Resistance and Bait Aversion

- Baits

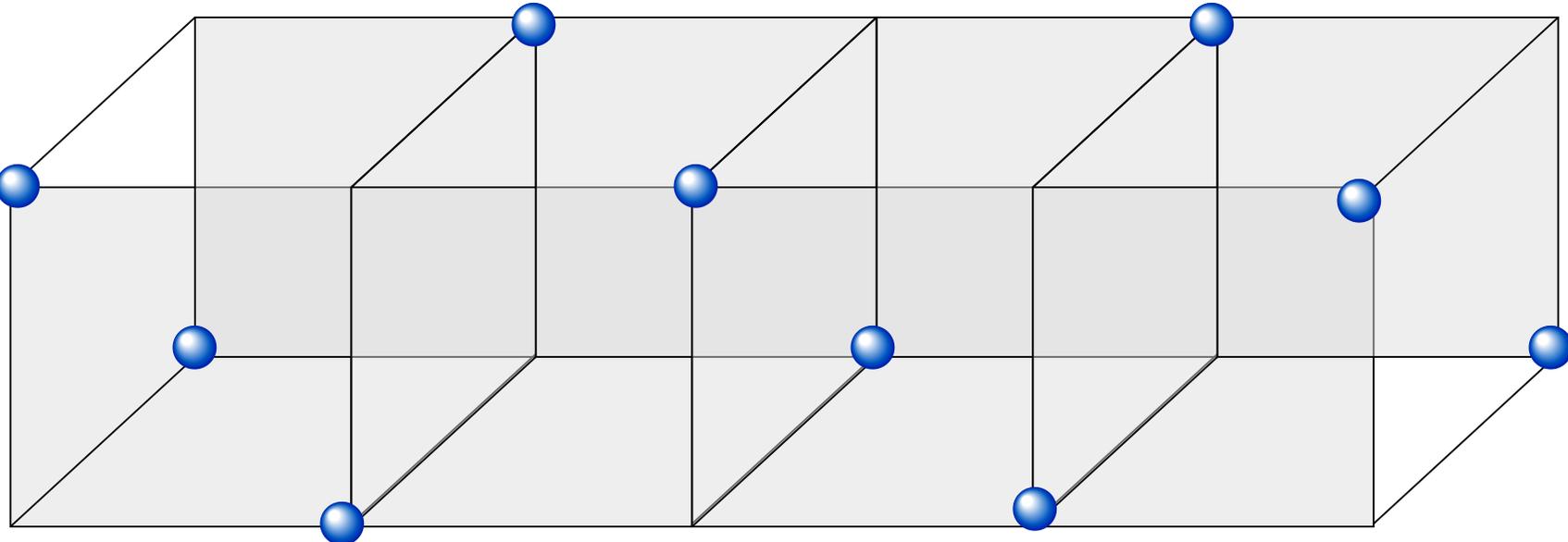
- 4 Baits

- Rotated every 3 months
 - 4 different active ingredients
 - 3 different chemical classes/modes of action
 - Food ingredient in each is different to decrease the chance of bait aversion occurring





Applying Bait



- Utilize bait gun for consistent application amounts in bb-sized placements
 - Place in likely harborages or travel points
 - Hinges, interior corners, & shelving grooves
- Bait 3-dimensionally
- Up/Down-Back/Front



Where would you
bait?



German Cockroaches: Treatment

- Insect Growth Regulators
- Insect specific; very low toxicity to humans and other non-target organisms
- Doesn't directly kill cockroaches so it is mixed with a residual product



German Cockroaches: Treatment

- On German roach cleanouts/initial treatment, DO NOT USE an Insect Growth Regulator
- Only use for maintenance **after** the population is eliminated or significantly decreased...why? : NyGuard works for months and needs to be placed out on clean surfaces after clean out of roaches and debrisotherwise most is wasted initially
- Protocol states use of NyGuard 3X's per year for maintenance in German roach-infested areas



German Cockroaches: Treatment

- NyGuard Alters biology
 - Adults are unable to reproduce
 - Nymphs cannot molt to next stage of development properly
 - Cannot complete life cycle
- As a result, behavior is altered
 - Move out in the open
 - Twisted wings do not allow entry into cracks and crevices



Exclusion Techniques

- Use dust before sealing
- Any crack, crevice, void, or openings that can harbor pests
- In wall voids around plumbing exits
- Cracks along baseboards
- Openings between built-in cabinets and walls or floors
- Under windowsills

German Cockroaches: Monitoring

- Captures insects
- Indicates where pockets of insects are harboring
- Monitor the effectiveness of treatments
- Place behind the stove, behind the refrigerator, under the cabinet where the sink is present & in any other area where active roaches were observed
- Check on a weekly basis and replace when necessary until the infestation is eliminated
- Massey Insect Detection Trap (contains a strip of molasses that attracts all stages)
- Victor Roach Pheromone Trap (contains the German roach aggregation pheromone)



Follow up

- Set a seven (7) day follow up
- On the seven (7) day follow up, interview the customer to determine any areas of activity. Inspect for any areas of activity
- Apply bait gel to all areas previously baited only if bait is gone. Also apply bait to any new areas of infestation
- Set up another seven (7) day follow up, bait active areas
- A population of German roaches can be controlled usually in 3 - 4 visits



Would German roaches do well here?





Would German roaches do well here?

