July 7, 2017

Via Electronic Submission: http://www.regulations.gov

Mr. Richard Keigwin
Acting Director, Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

Re: Docket ID No. EPA-HQ-OPP-2015-0393;
Registration Reviews: Human Health and Ecological Risk Assessments of Synthetic Pyrethroids and Pyrethrins

Dear Mr. Keigwin,

The National Pest Management Association (NPMA), the only national trade group for professional structural pest management companies, appreciates the opportunity to comment on the U.S. Environmental Protection Agency (EPA) proposed *Registration Reviews: Human Health and Ecological Risk Assessments of Synthetic Pyrethroids and Pyrethrins*. These comments have been submitted to Docket ID No. EPA-HQ-OPP-2015-0393, with the intent of these comments applying to all open registration reviews for pyrethroids and pyrethroids that were initially published in the Federal Register on November 29, 2016.

NPMA, a non-profit organization with more than 7,000 members from around the world (including 5,500 U.S. based companies), was established in 1933 to support the pest management industry. NPMA's member companies manage pests including rodents, ants, cockroaches, bed bugs, mosquitoes, spiders, stinging insects, termites and other pests in countless commercial, residential and institutional settings. NPMA members are committed to providing quality pest management services that protect public health, food and property.

I. Vital to protecting public health

Pyrethroids are one of the most widely used pesticides within the structural pest management industry to protect public health. To protect public health, the structural pest management

industry uses pyrethroid pesticides indoors, in soil treatments or on the exterior periphery of buildings. When used in this manner, pyrethroids pose almost no risk of exposure or harm to people, pets, non-target wildlife, aquatic invertebrates or pollinators. Pyrethroids are a tremendous benefit to
society used throughout the nation to preserve our food supply and in and around homes and businesses to promote a thriving commerce and protect public health.

Some of public health pests that pyrethroids help pest management professionals use pyrethroids against include:

Mosquitoes and Ticks – Arthropod borne diseases like Zika, Dengue, Powassan, West Nile Virus, and Lyme disease are transmitted by mosquitoes and ticks. Pyrethroids play an important role in Integrated Pest Management (IPM) programs designed to control these threats to public health.

Stinging Insects - According to the American College of Allergy, Asthma, and Immunology, more than two million Americans are allergic to stinging insects, more than 500,000 enter hospital emergency rooms every year suffering from insect stings, and between 40-150 people are killed each year as a result of these stings.

Cockroaches - Suppression and eradication is vital to health care facilities, homes, and sites where food is prepared or served. Cockroaches contaminate food and spread filth by walking through contaminated areas. They commonly carry disease causing pathogens like staphylococci, streptococcus, coli-form, molds, salmonella, yeasts, and clostridia.

Bed bugs - In 2013, 99.6 percent of pest management professionals received complaints about bed bugs.[1] Pyrethroids are among the most effective products used to manage bed bug infestations. Without pyrethroids, the physical and emotional well-being of people is at risk. Bed bugs cause anxiety, emotional distress, and insomnia in people. Not only are bed bugs a horror in the daily lives for those citizens that have an infestation but the economic impact of bed bugs can be crippling. A recent study showed that on average, a single report of bed bugs in traveler reviews lowers the value of a hotel room by $38 and $23 per room per night for business and leisure travelers respectively.[2] Additionally, bed bug treatments are made inside structures, pose no risk to non-target organisms, and help keep hospitals, hotels, nursing homes, and other important places bed bug free.

Termites – Termites cause an estimated $5 billion in damage to structures in the United States each year, affecting more than 600,000 homes. The cost of repairs for termite damage varies from minor infestations to extensive, and in some extreme cases leading to the demolition of entire homes because of termite damage. The Department of Housing and Urban Development (HUD) recently released updated policy on termite treatment

[1] Potter, M.F., K.F. Haynes, J. Fredericks & M. Henriksen (2013) Bed Bug Nation. Are We Making Any Progress? *PestWorld*, September October 2013, 5-9.
[2] Carl Nathe, "Bed Bugs 'bite' the Wallet of Hotel Owners," *ScienceDaily*, July 14, 2015, http://www.sciencedaily.com/releases/2015/07/150714101145.htm.

and reporting in order to insure FHA approved loans. HUD termite policy is indicative of continued and persistent termite damage in the area.

Furthermore, it would be difficult to find any segment of the food industry that could comply with strict federal sanitation and health regulations, pursuant to the Food Safety Modernization Act, without an adequate pest management program.

Pyrethroids are used in an array of use patterns and against a diverse group of pests; it would be accurate to consider pyrethroids as the proverbial "work-horse" pesticide in the structural pest management tool-box. In order to protect public health, we cannot afford to further restrict or mitigate pyrethroid use patterns.

For example, a review of the National Pesticide Information Retrieval System (NPIRS)[3] for bifenthrin, a widely used pyrethroid insecticide, reveals that 49 different companies hold registrations for this active ingredient, with more than 200 different application sites and target pests listed in directions for use for this single active ingredient (see Appendix for full list). Of the target pests, more than 120 are considered structural pests at least two dozen are public health pests. This single example underscores the importance of pyrethroids as an indispensable tool in the structural pest control industry's efforts to protect public health.

II. Benefits to Society

Pesticides approved by EPA pursuant to the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) cannot cause any unreasonable adverse effects on the environment, taking into account the economic, social and environmental costs and benefits of the use of any pesticide. The societal benefit is a cornerstone of any pesticide approved under FIFRA and the reason billions of dollars are spent to bring these public health protection tools to the market.

In a memorandum issued by EPA in 2016, the Agency acknowledges the widespread usage patterns of pyrethroids in non-agricultural settings and states, "This level of widespread usage suggests that the benefits (including public health benefits for pests of public health importance) are very high[4]." This Agency acknowledgment that the "benefits are very high" should not be minimized but rather emphasized as part of this registration review process.

We are concerned that EPA may not fully comprehend the public health benefit associated with pyrethroids and want to clearly state how and why these products are so very important to the structural pest management industry. In addition to acknowledging the specific public health pests and diverse use patterns associated with pyrethroids; when analyzing the benefit to society EPA should also consider: 1.) pyrethroid efficiency and effectiveness, 2.) safety to people and the environment, and 3.) limited alternatives to pyrethroids.

[3] National Pesticide Information Retrieval System, Purdue University, http://ppis.ceris.purdue.edu/
[4] U.S. Environmental Protection Agency, *Memorandum: Usage Characterization and Alternatives Summary for Synthetic Pyrethroids Used in Residential Lawns and Outdoor Vegetative Spot Treatments*, p. 2, (April 13, 2016).

a. Efficiency and Effectiveness

In 2016 the Pyrethroid Working Group (PWG) conducted a survey[5] of NPMA members on the importance of pyrethroids. Specifically, respondents stated that the loss of pyrethroids would greatly limit efficiency and increase costs.

• 85% of respondents said their businesses' insecticide costs would increase
• 68% said their insecticide application frequencies would increase
• 63% said their training and management requirements would increase

The increase in costs due to the loss of pyrethroid use patterns would be passed on to the consumer – the very people in need of valuable, and in some instances public health protecting, pesticide applications. We fear that the populations most vulnerable to some of the most dangerous and deadly pests would be disproportionately affected as an unintended consequence of an EPA determination to limit the use of pyrethroids. For example, in a survey of public housing units in Gary, Indiana, researchers found evidence of pest infestations in 81% of units surveyed and isolated cockroach allergens, which are an important trigger for asthma and allergies, in 98% of kitchen dust samples[6].

The efficiency and effectiveness of pyrethroids play an vital role in integrated pest management. Pyrethroids are extremely effective, leading to very low rates of application, resulting in reduced pesticide use and consumer costs. In the PWG survey pyrethroids were identified as the most widely used pesticide by NPMA members and when asked about relative importance of making pest management decisions the following were listed as "important" or "very important":

- The broad spectrum of insects controlled in a single application
- Product efficacy including speed of knockdown and control
- Long lasting control

NPMA members make careful decisions to use pyrethroids in order to minimize impacts on their customers and the environment while getting the job done to prevent the hazards associated with dangerous and deadly pests.

Lastly, pyrethroids have been developed in a large diversity of product types that enable more niche structural uses, rather than solely agriculture uses, creating the availability of several products specific to the structural industry which is sometimes a marginalized market segment.

[5] Hurley, T. 2017. The Value of pyrethroids in U.S. Agricultural and Urban Settings: Value of Insecticides to Urban Pest Management Professionals. AgInfomatics, Madison, WI
[6] Wang, C., M.M. Abou El-Nour and G.W. Bennett. 2008. Survey of pest infestation, asthma, and allergy in low-income housing. Journal of Community Health. 33: 31-39.

b. Safe for People and the Environment

Pyrethroid use patterns have a comparatively low mammalian toxicity making them well suited for indoor residential and commercial uses. When used outdoor in accordance with label instructions pyrethroids pose no threat. They are also non-toxic to aquatic plants, mollusks and amphibians and when used in either outdoor or indoor structural use patterns pyrethroids pose no health risks to applicators when used in accordance with label instructions.

c. Limited Alternatives Available

Pyrethroids are more efficient than predecessor chemistries with few if any alternatives for their specific use patterns. Pyrethroids have gained increased importance since the cancellation of many organophosphate insecticides' structural use patterns. Other valuable alternative insecticide classes are under a continuous review by EPA and the structural pest management industry is becoming increasingly concerned that EPA decisions will seriously inhibit our ability to effectively use pesticides to protect public health. Limiting the ability to use valuable pesticides like pyrethroids is akin to entering a boxing match with one arm tied behind our back. We believe if EPA truly endorses integrated pest management and understands persistent resistance issues, the Agencycannot afford to limit any use patterns for pyrethroids. Instead, we explicitly highlight the importance of pyrethroids to the structural pest management industry and warn of the public health risks to society associated with limited pyrethroid use patterns.

We hope EPA understands the important benefit to society associated with pyrethroids. Pyrethroids represent a natural progression in chemistry that are more efficient, effective and safe with very few alternatives available on the horizon. These benefits must be a very important factor in any registration review decision, not only because FIFRA requires it, but because society demands it.

III. Structural Use Patterns Are Unique

As NPMA noted in its submission of comments in response to *Evaluation of Existing Regulation*, EPA-HQ-OA-2017-0190 we believe structural pest control use patterns are sometimes poorly understood and marginalized within EPA, when they should be highlighted and are of paramount importance to protect public health. We are concerned that this is happening again when considering this preliminary risk assessment and believe that the data and estimates used are not a realistic or accurate depiction of structural use patterns.

Structural pest management applications are often made as spot treatments or crack and crevice applications. This targeted approach, focused on pest source locations and invasion points on the exterior of buildings, and highly focused applications indoors to specific harborage areas

highlight the ways that structural pest control use patterns differ from many other application methods.

The benefits that these products provide are immense, and we strongly encourage EPA to engage with stakeholders and user groups to better understand the unique use patterns employed by the structural pest management industry and carefully consider the benefits of pesticides intended for structural uses in all pesticide registration and review processes. We commend EPA for working with state regulators and industry during an in-field demonstration of pyrethroid uses for structural use patterns, and we would welcome the opportunity to conduct another in-field demonstration to ensure our use patterns are accurately understood.

IV. Recent Risk Mitigation and Restrictions on Pyrethroids Need to Be Taken Into Account

In 2009, EPA undertook a "pyrethroid labeling initiative" titled "Environmental Hazard and General Labeling for Pyrethroid Non-Agricultural Outdoor Products Notification." These label changes imposed severe restrictions on structural pest management use patterns for pyrethroids on and around structures in an attempt to mitigate pyrethroid run off to surface water. In addition, the California Department of Pesticide Regulation imposed additional, more burdensome restrictions on pyrethroids used for structural pest management.[7] As a result, industry undertook costly and time-consuming efforts to educate clients, re-train applicators and update treatment protocols to conform with the changes to label directions and regulations. These risk mitigation efforts already imposed on the industry, need to be taken into effect and allowed to work before additional restrictions are placed on this important class of insecticides.

V. Additional Concerns Regarding the Risk Assessments

Throughout the reevaluation of pyrethroids, NPMA has been working closely with PWG and are also active members of the Pesticide Policy Coalition (PPC). Members of these two groups include pesticide registrants and have a superior expertise with regards to some of the scientific data used in the preliminary risk assessments. While NPMA's expertise is in pesticide use and application, we would be remiss if we did not reiterate some key points that have been raised by PWG and PPC.

Specifically:

- EPA's assessment did not take into account well-established restrictions that are already required on product labels
- The residential use scenario provided by the Agency was completely new in this assessment: the assumptions have not been validated and need to be more broadly reviewed. An independent, peer review of this new standard should be conducted to verify that the assumptions are sound.

[7] CAL. FOOD & AGRIC. CODE § 6000, 6970, 6972 (June 19, 2012)
http://www.cdpr.ca.gov/docs/legbills/rulepkgs/11-004/text_final.pdf

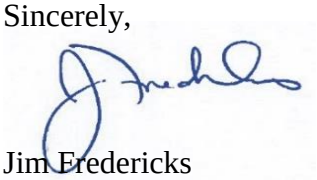
- The assessment is overly conservative and suggests an assumption that even the agency questions, "it appears unlikely that users will apply each chemical under these circumstances, and on a yearly basis for 30 consecutive years, as assumed in the modeling…"
- In modeling spot treatments EPA uses the "upper bound estimate" for lbs. applied, when in practice a very little product is typically applied in these use patterns.
- EPA's standard risk assessment approach significantly overstates the risk of pyrethroids because of their unique properties. The extreme hydrophobicity (limited solubility in water and tight binding to soil/sediment) of the pyrethroids needs to be taken into account.
- Pyrethroids adsorb to organic matter more strongly than any other modern pesticide, and only a very small fraction of the total pyrethroid in water or sediment is freely dissolved at any time.

We urge EPA to address these concerns and ensure that the best available science is being used to make any final decision on pyrethroid uses.

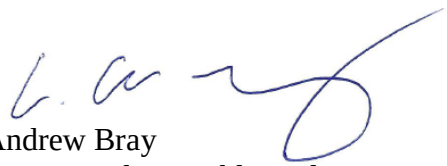
VI. Conclusion

Thank you for the opportunity to provide comments to on the proposed *Registration Reviews: Human Health and Ecological Risk Assessments of Synthetic Pyrethroids and Pyrethrins, Docket ID No. EPA-HQ-OPP-2015-0393.*In conclusion, we urge the Agency to carefully consider the comments presented here in light of the impact that future risk mitigation decisions may have on the ability of the structural pest management industry to provide much needed protection from pests, including the important role of protecting public health from the threats posed by arthropod pests.

Sincerely,



Jim Fredericks
Vice President, Technical & Regulatory Affairs
National Pest Management Association



Andrew Bray
Vice President, Public Policy
National Pest Management Association

APPENDIX : Selected List of Target Pests and Application Sites for Bifenthrin (from National Pesticide Information Retrieval System)

Target Pests	Public Health Pests	Structural Pests	Application Sites
ADELGIDS	AMERICAN COCKROACH	ADELGIDS	AIR CONDITIONING EQUIPMENT (UNDERGROUND)
ALFALFA WEEVIL	AMERICAN DOG TICK	AMERICAN COCKROACH	AIRCRAFT
AMERICAN COCKROACH	BED BUG	AMERICAN DOG TICK	ANT HILLS
AMERICAN DOG TICK	BEES	ANNUAL BLUEGRASS WEEVILS	ATHLETIC FIELDS (FOLIAR TREA
	BITING FLIES	ANTS	ATHLETIC FIELDS (SOIL TREATM
ANNUAL BLUEGRASS WEEVILS	BLACK WIDOW SPIDER	APHIDS	BARNS (INDOOR)
ANTS	BROWN DOG TICK	ARGENTINE ANT	BARNS (OUTDOOR)
APHIDS	BROWN RECLUSE SPIDER	ARMYWORM	BASEMENTS
APPLE CURCULIO	BROWNBANDED COCKROACH	ASIATIC GARDEN BEETLE (LARVAE)	BOTTLING PLANT SURFACES
ARGENTINE ANT	CARPENTER BEE	BAGWORM	BOTTLING PLANTS (RESIDUAL C TREATMENT)
ARMYWORM	CHIGGERS (REDBUGS)	BANKS GRASS MITE	BREWERIES
ASIAN LADY BEETLES	DEER TICKS	BED BUG	BREWERIES (RESIDUAL CRACK TREATMENT)
ASIATIC GARDEN BEETLE (LARVAE)	FIRE ANT	BEES	BUILDING FOUNDATIONS
BAGWORM	FLEAS (ADULT)	BEETLES	BUILDING FOUNDATIONS (SOIL
BANDEDWINGED WHITEFLY	GERMAN COCKROACH	BILLBUGS	BUILDINGS (EXTERIOR)
BANKS GRASS MITE	HORNETS	BITING FLIES	BUILDINGS (NONAGRICULTURA
BEAN APHID	HOUSE FLY	BLACK TURFGRASS ATAENIUS	BUILDINGS (NONAGRICULTURA TREATMENT)
BEAN LEAF BEETLE	MOSQUITOES	BLACK WIDOW SPIDER	BUILDINGS (NONAGRICULTURA TREATMENT)
BED BUG	PHARAOH ANT	BLUEGRASS BILLBUG	BUILDINGS (WOOD)
BEES	SCORPIONS	BOXELDER BUG	BUILDINGS AND STRUCTURES (OUTDOOR)
BEET ARMYWORM	SMOKY BROWN COCKROACH	BROAD MITE	BUSES (FOOD/FEED) (NON-RESI TREATMENT)
BEETLES	WASPS	BROWN DOG TICK	CANDY FACTORIES (INDOOR IN
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
BILLBUGS	YELLOWJACKETS	BROWN RECLUSE SPIDER	CANDY FACTORIES (OUTDOOR
BITING FLIES		BROWNBANDED COCKROACH	CANNERIES (INDOOR-INEDIBLE
BLACK TURFGRASS ATAENIUS		CARPENTER ANTS	CANNERIES (OUTDOOR-INEDIBL
BLACK VINE WEEVIL		CARPENTER BEE	CANNERIES (RESIDUAL CRACK TREATMENT)
BLACK WIDOW SPIDER		CARPET BEETLE	CLOSETS
BLUEGRASS BILLBUG		CATERPILLARS	COMMERCIAL/INSTITUTIONAL/ (OUTDOOR)
BOXELDER BUG		CENTIPEDES	COMMERCIAL/INSTITUTIONAL/ (INDOOR INEDIBLE)
BROAD MITE		CEREAL LEAF BEETLE	COMMERCIAL/INSTITUTIONAL/ (INDOOR)

BROWN DOG TICK		CHIGGERS (REDBUGS)	COMMERCIAL/INSTITUTIONAL/ (OUTDOOR INEDIBLE)
BROWN RECLUSE SPIDER		CHINCH BUG	COMMERCIAL/INSTITUTIONAL/ (WALL VOIDS)
BROWN SOFT SCALE		CICADAS	CONCRETE SLABS
BROWNBANDED COCKROACH		CIGARETTE BEETLE	CONCRETE SLABS (SOIL CONTA TREATMENT)
BUDWORMS		CLOVER MITE	CONSTRUCTION YARDS
CABBAGE APHID		COCKROACHES	DAIRY PROCESSING PLANTS (IN
CALIFORNIA RED SCALE		CRANE FLIES	DAIRY PROCESSING PLANTS (OU
CARPENTER ANTS		CRICKETS	DAIRY PROCESSING PLANTS (RE CREVICE TREATMENT)
CARPENTER BEE		CUTWORMS	DOMESTIC DWELLINGS (INDOO
CARPET BEETLE		DEER TICKS	DOMESTIC DWELLINGS (INDOO
CATERPILLARS		DERMESTID BEETLES	DOMESTIC DWELLINGS (OUTDO
CENTIPEDES		EARWIGS	DOMESTIC DWELLINGS (PERIME
CEREAL LEAF BEETLE		ELM LEAF BEETLE	DOOR FRAMES
CHIGGERS (REDBUGS)		ERIOPHYID MITES	DUMPS (GARBAGE/REFUSE) (OU
CHINCH BUG		EUROPEAN CHAFER (LARVAE)	EATING EST NON-FOOD CONTAC
CICADAS		EUROPEAN CRANE FLY	EATING ESTABLISHMENTS (IND
CIGARETTE BEETLE		EUROPEAN RED MITE	EATING ESTABLISHMENTS (IND
CITRUS BLACKFLY		FALL ARMYWORM	EATING ESTABLISHMENTS (RES CREVICE TREATMENT)
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
CITRUS MEALYBUG		FALL WEBWORM	EAVES
CITRUS THRIPS		FIRE ANT	EGG PROCESSING PLANTS (INDO
CITRUS WHITEFLY		FIREBRAT	ELECTRIC POWER TRANSFORME (UNDERGROUND)
CLOVER MITE		FLEAS (ADULT)	ELECTRIC POWER TRANSFORME
COCKROACHES		FLEAS (LARVAE)	EXISTING WOOD BUILDINGS OR (NONSOIL CONTACT NONFUMIC
COLORADO POTATO BEETLE		FLIES	EXISTING WOOD BUILDINGS OR (SOIL CONTACT NONFUMIGATIO
CORN ROOTWORMS (ADULT)		FLOUR BEETLES	FENCE ROWS (FOLIAR TREATME
COTTON APHID		FRUIT FLIES	FENCEROWS
COTTON BOLL WEEVIL		FUNGUS GNATS (ADULT)	FENCEROWS (NONAGRICULTUR TREATMENT)
COWPEA APHID		GERMAN COCKROACH	FIREWOOD (STACKED) (NONSOI NONFUMIGATION TREATMENT)
CRANE FLIES		GNATS	FOOD HANDLING ESTABLISHME
CRANE FLIES		GRAIN WEEVILS	FOOD MARKETING/STORAGE/DI (INDOOR INEDIBLE)
CRICKETS		GRASS WEBWORM	FOOD PROCESS PLANT SURFACE
CUCUMBER BEETLES		GRASSHOPPERS	FOOD PROCESSING PLANTS
CUTWORMS		GREEN JUNE BEETLE (LARVAE)	FOOD PROCESSING PLANTS (IND
DEER TICKS		GREENBUG	FOOD PROCESSING PLANTS (OU
DERMESTID BEETLES		GROUND BEETLES	FOOD PROCESSING PLANTS (RE CREVICE TREATMENT)

DIAPREPES		GYPSY MOTH	FOOD STORAGE AREAS
DICHONDRA FLEA BEETLE		HORNETS	FOOD STORAGE BINS
EARWIGS		HOUSE FLY	FRUIT TREES (NONBEARING)
ELM LEAF BEETLE		IMPORTED FIRE ANTS	GARAGES
ERIOPHYID MITES		INDIAN MEAL MOTH	GARBAGE CANS (OUTDOOR)
EUROPEAN CHAFER (LARVAE)		IXODES SPP. TICKS	GARBAGE ROOMS
EUROPEAN CORN BORER		JAPANESE BEETLE	GRAIN MILLS
EUROPEAN CRANE FLY		LACE BUGS	GRANARIES (EMPTY) (NON-RES TREATMENT)
EUROPEAN RED MITE		LAWN ARMYWORM	HEDERA (GREENHOUSE-FOLIAR
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
FALL ARMYWORM		LAWN MOTHS (LARVAE)	HOSPITALS
FALL WEBWORM		LEAFROLLERS	HOSPITALS (RESIDUAL CRACK TREATMENT)
FIRE ANT		LESSER GRAIN BORER	HOSPITALS (RESIDUAL SPOT TR
FIREBRAT		MERCHANT GRAIN BEETLE	HOTELS/MOTELS/TOURIST COU
FLEA BEETLES		MIDGES	HOUSEHOLD CONTENT STORAG
FLEAHOPPERS		MILLIPEDES	HOUSEHOLD CONTENTS (CLOTH CONTAINERS) (DRAWERS)
FLEAS		MITES	INDUSTRIAL AREAS (OUTDOOR
FLEAS (ADULT)		MOLE CRICKETS	INDUSTRIAL SITES (SOIL TREAT
FLEAS (LARVAE)		MOSQUITOES	IRRIGATION SUPPLY SYSTEMS (
FLIES		MOTHS	LABORATORY (UNSPECIFIED)
FLOUR BEETLES		NORTHERN MASKED CHAFER (LARVAE)	LABORATORY PREMISES
FRUIT FLIES		ODOROUS HOUSE ANT	LIVESTOCK PREMISES (ENCLOS TREATMENT)
FULLER ROSE WEEVIL		OLD HOUSE BORER	LOCKER ROOMS
FUNGUS GNATS (ADULT)		PAVEMENT ANT	LOW VOLUME APPLICATION (A
GERMAN COCKROACH		PHARAOH ANT	LUMBER
GNATS		PILLBUGS	MASONRY
GRAIN WEEVILS		POWDERPOST BEETLES	MEAT PROCESS PLANT SURFAC
GRAPE LEAFHOPPER		PSOCIDS	MEAT PROCESSING PLANTS (IN
GRAPE MEALYBUG		PYRAMID ANT	MEAT PROCESSING PLANTS (RE CREVICE TREATMENT)
GRASS WEBWORM		RED HARVESTER ANT	MEAT PROCESSING PLANTS (RE TREATMENT-EDIBLE AREAS)
GRASSHOPPERS		ROACHES	MOBILE HOMES (INDOOR)
GREEN JUNE BEETLE (LARVAE)		ROSE CURCULIO	NURSING HOMES
GREEN PEACH APHID		SAWTOOTHED GRAIN BEETLE	NURSING HOMES (INDOOR INED
GREENBUG		SCORPIONS	NUT TREES (NONBEARING)
GREENHOUSE THRIPS		SILVERFISH	OFFICES (INDOOR INEDIBLE)
GREENHOUSE WHITEFLY		SMOKY BROWN COCKROACH	OFFICES (OUTDOOR INEDIBLE)
GROUND BEETLES		SOD WEBWORMS	OFFICES (RESIDUAL CRACK AN
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
GYPSY MOTH		SOWBUGS	ORNAMENTAL FLOWERING PLA

HOP APHID		SPIDER MITES	ORNAMENTAL FLOWERING PLA TREATMENT)
HORNETS		SPIDERS	ORNAMENTAL FLOWERING PLA FOLIAR TREATMENT)
HORNETS		SPRINGTAILS	ORNAMENTAL FLOWERING PLA PLANTSCAPES)
HOUSE FLY		STINK BUGS	ORNAMENTAL FOLIAGE PLANT
HUNTING BILLBUG		SUBTERRANEAN TERMITES	ORNAMENTAL FOLIAGE PLANT TREATMENT)
HYPERODES WEEVILS		TARNISHED PLANT BUG	ORNAMENTAL FOLIAGE PLANT PLANTSCAPES)
IMPORTED FIRE ANTS		TENT CATERPILLARS	ORNAMENTAL FRUIT TREES (BA
INDIAN MEAL MOTH		TERMITES	ORNAMENTAL FRUIT TREES (NO
IXODES SPP. TICKS		THRIPS	ORNAMENTAL GRASSES (SOIL T
JAPANESE BEETLE		TICKS	ORNAMENTAL GROUND COVER
LACE BUGS		TREEHOPPERS	ORNAMENTAL HERBACEOUS PL TREATMENT)
LAWN ARMYWORM		TWOSPOTTED SPIDER MITE	ORNAMENTAL HERBACEOUS PL PLANTSCAPES)
LAWN MOTHS (LARVAE)		VINEGAR FLY	ORNAMENTAL LAWNS
LEAF FEEDING BEETLES		WAREHOUSE BEETLE	ORNAMENTAL LAWNS (FOLIAR
LEAFEATING CATERPILLARS		WASPS	ORNAMENTAL LAWNS (GRASS)
LEAFHOPPERS		WEEVILS	ORNAMENTAL LAWNS (SOIL TR
LEAFMINERS		WOOD BORING BEETLES	ORNAMENTAL NUT TREES (BAR
LEAFROLLERS		WOOD INFESTING INSECTS	ORNAMENTAL NUT TREES (NON
LESSER GRAIN BORER		YELLOWJACKETS	ORNAMENTAL PLANTS (FOLIAR
LYGUS BUGS			ORNAMENTAL PLANTS (GREEN TREATMENT)
MEALYBUGS			ORNAMENTAL PLANTS (INTERI
MELON APHID			ORNAMENTAL PLANTS (WATER
MERCHANT GRAIN BEETLE			ORNAMENTAL TREES
MIDGES			ORNAMENTAL TREES (BARK TR
MILLIPEDES			ORNAMENTAL TREES (FOLIAR T
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
MITES			ORNAMENTAL TREES (GREENH TREATMENT)
MITES			ORNAMENTAL TREES (INTERIO
MOLE CRICKETS			ORNAMENTAL TREES (WATER T
MOLE CRICKETS (ADULT)			ORNAMENTAL TURF (ATHLETIC TREATMENT)
MORMON CRICKET			ORNAMENTAL TURF (ATHLETIC TREATMENT)
MOSQUITOES			ORNAMENTAL TURF (CEMETER
MOTHS			ORNAMENTAL TURF (COMMERC TREATMENT
NORTHERN MASKED CHAFER (LARVAE)			ORNAMENTAL TURF (GOLF COU TREATMENT)
ODOROUS HOUSE ANT			ORNAMENTAL TURF (GROWN F
OLD HOUSE BORER			ORNAMENTAL TURF (INDUSTRI

ONION THRIPS			ORNAMENTAL TURF (RECREATI TREATMENT)
ORCHID WEEVIL			ORNAMENTAL TURF (SOIL TREA
ORIENTAL BEETLE (LARVAE)			ORNAMENTAL WOODY PLANTS
PAVEMENT ANT			ORNAMENTAL WOODY SHRUBS
PEA APHID			ORNAMENTAL WOODY SHRUBS
PEAR PSYLLA			ORNAMENTAL WOODY SHRUBS
PEAR THRIPS			ORNAMENTAL WOODY SHRUBS TREATMENT)
PECAN LEAF SCORCH MITE			ORNAMENTAL WOODY SHRUBS PLANTSCAPES)
PECAN WEEVIL			ORNAMENTAL WOODY SHRUBS
Pests			PARKS
PHARAOH ANT			PARKS (FOLIAR TREATMENT)
PILLBUGS			PATHS (SOIL TREATMENT)
PINE BEETLES			PATIOS (SOIL TREATMENT)
PINE SHOOT MOTHS			PET BEDDING
PINE TIP MOTHS			PET KENNELS (ENCLOSED PREM
PLANT BUGS			PET SLEEPING QUARTERS
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
PLUM CURCULIO			POULTRY HOUSE PREMISES (EN TREATMENT-FUMIGATION)
POTATO APHID			POULTRY HOUSES (OPEN PREMI
POTATO LEAFHOPPER			POULTRY PROCESSING PLANT (CRACK/CREVICE TREATMENT)
POTATO PSYLLID			POULTRY PROCESSING PLANTS
POWDERPOST BEETLES			POULTRY PROCESSING PLANTS TREATMENT-EDIBLE AREAS)
POWDERPOST BEETLES			RAILROAD BOXCARS (FEED/FOO
PSOCIDS			RAILROAD CARS
PSYLLIDS			RECREATIONAL AREAS (FOLIAR
PYRAMID ANT			RECREATIONAL AREAS (SOIL TI
RED HARVESTER ANT			REFUSE STORAGE AREAS (OUTI
RED SPIDER MITES			RESTAURANTS (INDOOR INEDIB
RICE MOTH			RESTAURANTS (OUTDOOR INED
RICE STEM BORER			RESTAURANTS (RESIDUAL CRA TREATMENT)
ROACHES			RIGHTS-OF-WAY (COMMUNICAT
ROSE APHID			RIGHTS-OF-WAY (PIPELINE) (SO
ROSE CURCULIO			RIGHTS-OF-WAY (POWER LINES
RUSSET MITE			RIGHTS-OF-WAY (UTILITY
RUSSIAN WHEAT APHID			RIGHTS-OF-WAY (UTILITY) (SOI
SAN JOSE SCALE (CRAWLERS)			ROADWAYS (SOIL TREATMENT)
SAWFLIES (LARVAE)			RUGS/CARPETS
SAWTOOTHED GRAIN BEETLE			SCHOOLS (INDOOR INEDIBLE)

SCALES (CRAWLERS)			SCHOOLS (OUTDOOR INEDIBLE)
SCORPIONS			SCHOOLS (RESIDUAL CRACK AN TREATMENT)
SEED BUGS			SEWERS
SILVERFISH			SHELVING
SILVERFISH			SHIPHOLDS (FEED/FOOD-EMPTY TREATMENT)
SMOKY BROWN COCKROACH			SHIPS (INDOOR-INEDIBLE)
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
SOD WEBWORMS			STORAGE ROOMS
SOD WEBWORMS			STORAGE YARDS
SOUTHERN MASKED CHAFER (LARVAE)			STUMPS
SOUTHWESTERN CORN BORER			TANK MIX
SOWBUGS			TELEPHONE CABLE CLOSURES (
SPIDER MITES			TELEVISION CABLE PEDESTALS
SPIDERS			TRAILERS (CAMP/TRAVEL) (IND
SPITTLEBUGS			TRANSPORTATION VEHICLES (F RESIDUAL SPACE TREATMENT)
SPOTTED ALFALFA APHID			TRUCKS (FEED/FOOD-EMPTY)
SPRINGTAILS			TRUCKS (NONFEED/NONFOOD)
STINK BUGS			ULTRA LOW VOLUME (ULV) API
STRAWBERRY ROOT WEEVIL			UNCULTIVATED NONAGRICULT TREATMENT)
SUBTERRANEAN TERMITES			UTILITY POLES (FOLIAR TREATI
SUGARCANE BORER			UTILITY POLES (SOIL TREATME
SWEET POTATO WHITEFLY			UTILITY ROOMS
SWEETPOTATO WEEVIL			VAULTS (UNDERGROUND)
TARNISHED PLANT BUG			WAREHOUSES (INDOOR INEDIBI
TENT CATERPILLARS			WAREHOUSES (OUTDOOR INEDI
TERMITES			WINDOW FRAMES
THRIPS			WINERIES (INDOOR INEDIBLE)
TICKS			WINERIES (OUTDOOR INEDIBLE
TOBACCO MOTH			WOOD BUILDINGS (SOIL CONTA TREATMENT)
TOMATO PSYLLID			WOOD DECKS
TREEHOPPERS			WOOD FENCES (SOIL CONTACT TREATMENT)
TROPICAL SPIDER MITE			WOOD FLOORING (SOIL CONTAC TREATMENT)
TWIG BORERS			WOOD JOISTS (SOIL CONTACT N TREATMENT)
Target Pests	**Public Health Pests**	**Structural Pests**	**Application Sites**
TWOSPOTTED SPIDER MITE			WOOD LANDSCAPING MATERIA NONFUMIGATION TREATMENT)
VARIEGATED LEAFHOPPER			WOOD PILES (TERRESTRIAL)
VEGETABLE WEEVIL			WOOD POLES/POSTS

VINEGAR FLY			WOOD POLES/POSTS (SOIL CONT TREATMENT)
WAREHOUSE BEETLE			WOOD POLES/POSTS (SOIL CONT TREATMENT)
WASPS			WOOD RAFTERS (NONSOIL CON TREATMENT)
WEEVILS			WOOD RAILROAD PILES (SOIL C NONFUMIGATION TREATMENT)
WESTERN FLOWER THRIPS			WOOD SIGNS (SOIL CONTACT N TREATMENT)
WHITEFLIES			WOOD STRUCTURAL PARTS (SO NONFUMIGATION TREATMENT)
WOOD BORING BEETLES			WOOD STRUCTURES (NONSOIL NONFUMIGATION TREATMENT)
WOOD INFESTING INSECTS			WOOD STRUCTURES (SOIL CONT TREATMENT)
YELLOWJACKETS			WOOD WALLS (SOIL CONTACT N TREATMENT