Survey of Professional Pest Management Industry Uses of Boric Acid & its Salts (Boron)

Presented by
The Canadian Pest Management Association

To
Health Canada
Pest Management Regulatory Agency

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General Information Regarding the Survey Conducted by CPMA

Company Data

Four companies with access to electronic use records for boric acid and its salts (boron) were able to complete a survey conducted by the Canadian Pest Management Association. In response to the survey, no company contributed less than 3 years of use data and two companies reported 4 years of use data (and one company submitted 5 years of use data for aerosol dust). These companies together represent a cohort of 310 pest management professionals. The companies characterize an excellent cross-section of the Canadian pest management industry by representing data from very small companies with just a few employees to larger companies that span the breadth of Canada.

Residential and Commercial Data Splits

PMRA requested data be split into residential and commercial uses. While not all companies were able to split their use data into these two categories, those that could, did. Thus, three categories of usage data can be found below. Two classes are segregated into their respective categories; commercial use and residential use. A third class, the combination class, includes (additively) all data from the segregated (commercial, residential) classes as well as the unsegregated data.

Assessment Used for MOE Calculation

We would like an opportunity to meet with The Pest Management Regulatory Agency (PMRA) to discuss the "Assessment Used" in Appendix IV-Mixer/Loader/Applicator and Post Application Risk Assessment, Table 1 of the Proposed Re-evaluation Decision (PRVD2012-03) of Boric Acid and its Salts (Boron). We feel many of the assessments used do not reflect the actual risk associated with use of each formulation. If PMRA is interested CPMA would like to suggest possible alternate assessment parameters that more realistically characterize risk and therefore are more protective of humans and the environment.

Daily Product Use Assumptions

In addition, we respectfully request PMRA update the assumptions made regarding amounts of product applied per day based on the data we are submitting. For example, in the case of dust/powder, the estimate used in Appendix IV overestimates daily use by 25 fold for the highest average daily use and 75 fold when using the mean daily use.

Labels

Technicians do not use boric acid every day. That is why there is a difference in the average amount per application, the maximum one day use amounts and the daily rates reported. CPMA would like to suggest that, based on the data provided, PMRA work with the registrant of each product to develop realistic application rates that allow for the continued used of the boric acid toolbox.

Manufacturers should add the PPE listed for each type of product to their labels. A majority of the technicians are already wearing more PPE than required by the label. (However, CPMA would note, all manufacturers should have to add the language. It should not be voluntary.)

A few manufacturers have submitted revised labels to PMRA as requested at the meeting in September.

Liquid Use Data

CPMA requests additional time from PMRA to find more realistic use data on these formulations as CPMA feel the use estimations in Appendix IV are overestimated.

Data Highlights

Company Highlights – 4 Companies			
Company 1 Profile	Company 2 Profile	Company 3 Profile	Company 4 Profile
<5 technicians	<15 technicians	<100 technicians	<250 technicians
3 years of data	3 years of data	4 years of data	4 years of data
Operations in 1 Province	Operations in 1 Province	Operations in 3 Provinces	Operations Canada wide
Commercial/ Residential Services	Commercial/ Residential Services	Commercial/ Residential Services	Commercial/ Residential Services
Residential Focus	Residential Focus	Commercial Focus	Commercial Focus

Dust/Powder Summary Highlights – 99% Active Ingredient Guarantee

- n = 4 companies
- Years of data = 14 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 3 (one large and two smaller companies)
- Companies reporting number of applications made[1] = 2
- The mean number of applications per tech per year[2] = 3.28 $\pm$ 63.4 applications (for a cumulative 7 year period)
- Average grams per application[3] = 38.4 $\pm$ 34.4 g
- During the 14 years, one hundred and fifty-six technicians (of the total cohort of 310 technicians) recorded use of dust/powder.
- All averages for dust/powder reflect usage by the 156 technicians. Averages are not based on calculations utilizing the entire cohort.
- So that the data for the company not providing number of applications could be incorporated and analyzed, most data is presented in grams applied by a technician per day.

[1] Not all companies reported number of applications or split usage into commercial and residential sections.
[2] This mean is weighted by number of technicians to ensure companies with fewer technicians do not skew the data.
[3] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.

Aerosol Dust Summary Highlights – 35.5% Active Ingredient Guarantee

- n = 3 (One company does not use aerosol dust.)
- Years of data = 12 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 2 (one large and one small company)
- Companies reporting number of applications made[4] = 2
- The mean number of applications per tech per year[5] = 2.6 ± 4.6
- Average grams per application[6] = 45.6 g ± 25.4
- During the 12 years, ninety-nine technicians (of the total cohort of 310 technicians) recorded use of aerosol dust.
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day in the Combination Category.

Cockroach Gel/Paste Summary Highlights – 33.3% Active Ingredient Guarantee

- n = 1 (Three companies do not use boric acid roach paste/gel)
- Years of data = 4 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 1 (one larger company)
- During the 4 years, sixty-five technicians used cockroach gel/paste
- Companies reporting number of applications made = 1
- The number of applications per tech per year[7] = 2.0
- Average grams per application[8] = 31.3 g
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

[4] Not all companies reported number of applications or split usage into commercial and residential sections.
[5] This mean is weighted to account for the 6 fold difference in number of technicians actually applying aerosol dust between the smaller and larger company.
[6] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[7] No mean is presented because only one company provided data
[8] No mean is presented because only one company provided data

Ant Gel/Paste Summary Highlights – 5.4% Active Ingredient Guarantee

- n = 4 companies
- Years of data = 14 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 3 (one large and two smaller companies)
- Companies reporting total number of applications made[9] = 2
- The mean number of applications per tech per year[10] = 6.7 ± 0.8 (for a cumulative 7 year period)
- Average grams per application[11] = 14.9 ± 0.0 g
- During the 14 years, three hundred and seven technicians (of the total cohort of 310 technicians) recorded use of ant gel/paste.
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

Granular Bait Summary Highlights - 5% Active Ingredient Guarantee

- n = 2 companies (Of the 4 companies that submitted data, two were excluded from this measurement as one company does not use granular bait, and one company used granular bait only one time in the last four years)
- Years of data = 4 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 1 (one smaller company)
- Companies reporting number of applications made[12] = 1
- One company average number of applications per tech per year[13] = 10.7 applications
- One company's average grams per application[14] = 250 g
- During the 4 years, eighty-three technicians (of the total cohort of 310 technicians) recorded use of granular bait
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

[9] Not all companies reported number of applications or split usage into commercial and residential sections
[10] The mean is weighted to account for the > 50 fold difference in number of technicians between the smallest and the largest company.
[11] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[12] Not all companies reported number of applications or split usage into commercial and residential sections
[13] No mean is presented because only one company provided data. This is data for one small company, so it is possible the data is not valid for an industry wide assessment.
[14] No mean is presented because only one company provided data. This is data for one small company, so it is possible the data is not valid for an industry wide assessment.

Liquid Products Summary Highlights
n = 0 companies
Years of data = 0
Companies able to split data into residential and commercial applications = 0
Companies reporting number of applications made = 0 The mean number of applications per tech per year = cannot be reported Average grams per application = Cannot be reported
One company listed use of Tim-bor Professional PCP #24091 and Greenway Liquid ant and roach killer PCP# 29345. However, they were not able to provide any use data for these formulations. The other companies do not use the liquid formulations.
CPMA requests additional time from PMRA to find more realistic use data on these formulations as CPMA feel the use estimations in Appendix IV are overestimated.

Data Section 1 – Dust/Powder

Represented by Borid, PCP# 22379; Boradicate PCP# 30533: Pro Boradust Insecticide Dust, PCP# 19480; Timbor, PCP# 24091

Dust/Powder Summary Highlights – 99% Active Ingredient Guarantee

- n = 4 companies
- Years of data = 14 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 3 (one large and two smaller companies)
- Companies reporting number of applications made[15] = 2
- The mean number of applications per tech per year[16] = 3.28 ± 63.4 applications (for a cumulative 7 year period)
- Average grams per application[17] = 38.4 ± 34.4 g
- During the 14 years, one hundred and fifty-six technicians (of the total cohort of 310 technicians) recorded use of dust/powder.
- All averages for dust/powder reflect usage by the 156 technicians. Averages are not based on calculations utilizing the entire cohort.
- So the data for the company not providing number of applications could be incorporated and analyzed, most data is presented in grams applied by a technician per day.

Table 1.1 - Dust Uses (Powder Form)

Mean Usage Data and Standard Deviation (per Day)

Application Category	Cohort of Technicians used in Calculation		Average[18] In grams	Standard Deviation
Commercial [19, 20]	Only technicians who reported dust use in commercial situations	Average Grams of product applied per day	0.31	n/a
		At 99% AI guarantee - average amount of AI in product applied per day	0.30	n/a
Residential [21]	Technicians reporting residential dust use	Average Grams of product applied per day	0.33	±0.75
		At 99% AI guarantee - average amount of AI in product applied per day	0.33	±0.74
Combination [22]	Only technicians reporting actual use of boric acid dust (156 techs) [23]	Average Grams of product applied per day	9.32	±15.2
		At 99% AI guarantee - average amount of AI in product applied per day	9.22	±15.0

[15] Not all companies reported number of applications or split usage into commercial and residential sections.
[16] This mean is weighted by number of technicians to ensure companies with fewer technicians do not skew the data.
[17] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[18] Average in grams is a weighted mean. Weight based on technicians applying dust to avoid skewing data toward the mean values of smaller companies.
[19] The use recorded here is indicative of commercial dust applications with one company reporting
[20] There is no standard deviation as only one company reported in this category.
[21] The use recorded here is indicative of residential dust applications with 3 companies reporting.
[22] The combination category (residential + commercial + unknown) was created to report dust use for all four companies. This was done because one company did not split data into Commercial and Residential uses.
[23] The use of dust was measured by including only those technicians who applied dust as a powder

Section 1 – Dust/Powder (con't)

Table 1.**2** - Dust Uses (Powder Form)			
Maximum Usage per day - Maximum amount of product applied by one technician in one day			
Type of Application	**How often does this type of Maximum application occur?**	**Maximum amount in Grams**	**Amount of AI (in grams) at 99% guarantee**
Commercial Max Amount Applied	Occurs less commonly than once in every two years	1344	1331
Residential Max Amount Applied	Occurs less commonly than once in every two years	360	356
Maximum Means and Standard Deviation		**Average In grams**	**Standard Deviation**
Commercial Use Maximum Mean (Average of all commercial maximums reported)		1344	n/a [24]
Residential Use Maximum Mean (Average of all residential maximums reported)		296	±95.5

Table 1.3- Dust Uses (Powder Form)				
Mean Application Data (for Companies that Reported Total Number of Applications)				
			Average In grams	Standard Deviation
	Commercial [25]	Average Grams of product applied	53.3	n/a
		At 99% AI guarantee - average amount of AI in product	52.8	n/a
	Residential [26]	Average Grams of product applied	27.7	±44.7
		At 99% AI guarantee - average amount of AI in product	27.4	±44.3
	Combination[27]	Average Grams of product applied	38.4	±34.4
		At 99% AI guarantee - average amount of AI in product	38.0	±34.1

[24] There is no standard deviation as only one company reported in this category.
[25] There is no standard deviation as only one company reported in this category.
[26] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[27] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.

Section 1 – Dust/Powder (con't)

Table 1.4 - Dust Uses (Powder Form)	
Personal Protective Equipment Currently Being Worn While Using Dust/Powder	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
	Hat
Eye Protection	Safety glasses (one company reported using goggles)
Respiratory protection	Half face respirator – Comfo mask or similar.

Recommendation: CPMA recommends labels for aerosol dust include the addition of the above PPE to the aerosol dust labels.

Table 1.5 - Dust Uses (Powder Form)
Boric Acid and Its Salts – Species controlled
1) Ants (reported by all companies surveyed)
2) Cockroaches
3) Silverfish

Section 1 – Dust/Powder (con't)

Table 1.6 - Dust Uses (Powder Form)
Mitigation Measures and Special Practices for Dusts in Powder Form
1) No application in cracks of cupboard if not emptied prior to application.
2) Removal of visible dust/product residue
3) Restrict to void and crack and crevice application.
One company reported they require residents to not be present while application is being made. They also instruct the customer to wait one hour post application to reenter premises.

Table 1.7 – Dust Uses (Powder Form)
General Notes from PMPs about where the product is used
Timbor is good when moisture level is high in attics, voids or crawlspaces due to leaks or poor ventilation. It is non-repellent, which is different from the pyrethroids that have repellent properties. It has a much longer residual effect than any liquid formulations available.
Boric Acid dust is much less volatile than diatomaceous earth dust. Thus, it is preferred in equivalent situations.
Dusts, especially boric acid dusts, are advantageous in hot areas as they remain effective longer than gel baits and liquids (especially for roach control).
This product is not used on exposed surfaces, so there is no visible product left.
Residential use – One company primarily uses boric acid dust against ant species. The product is placed deep in cracks and voids, around plumbing, under kick plates in kitchens, attics and crawlspaces and wall voids.
Baits are less effective (and cost more) when food competition is high or poor sanitation is present. In these cases, dusts are a better formulation to use in these situations.

Section 1 – Dust/Powder (con't)

Table 1.8 – Dust Uses (Powder Form)
General areas where the product is most commonly used (though, use is not limited to these areas). Similar use sites have been combined, however, each product was only recorded from labeled use sites.
Commercial
Food Storage Areas
Inedible product areas of Meat packing plants
Food Processing Plants
Beverage Plants
Restaurants (food service establishments) and other food handling establishments
Supermarkets, Grocery Stores
Warehouses and other Commercial and Industrial buildings
Hospital Kitchens
Nursing home kitchens
Hotels/Motels – Common areas and kitchens
Bakeries
Schools
Kennels
Offices
Residential
Homes
Attics
Apartments

Table 1.9 – Dust Uses (Powder Form)
Tim-bor Use as a Dust
Three companies reported using Tim-bor as a dust. Tim-bor (use as a dust) ranged from approximately 1% of a company's dust use to approximately 10%.

Data Section 2– Aerosol Dust

Products include PermaDust, PCP# 27023 and Aerosol Boric Acid, PCP# 24642

Aerosol Dust Summary Highlights- 35.5% Active Ingredient Guarantee

- n = 3 (One company does not use aerosol dust.)
- Years of data = 12 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 2 (one large and one small company)
- Companies reporting number of applications made[28] = 2
- The mean number of applications per tech per year[29] = 2.6 ± 4.6
- Average grams per application[30] = 45.6 g ± 25.4
- During the 12 years, ninety-nine technicians (of the total cohort of 310 technicians) recorded use of aerosol dust.
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day in the Combination Category.

Table 2.1- Dust Uses (Aerosol Form)

Mean Usage Data and Standard Deviation (Per Day)

Type of Application	Cohort of Technicians used in Calculation		Average In grams [31]	Standard Deviation[32]
Commercial[33]	Only technicians reporting commercial aerosol dust use	Average Grams of product applied per day	0.44	± 0.26
		At 35.5% AI guarantee, average amount of AI in product applied per day	0.16	± 0.09
Residential [34]	Only technicians reporting residential aerosol dust use	Average Grams of product applied per day	0.22	± 0.53
		At 35.5% AI guarantee, average amount of AI in product applied per day	0.08	± 0.19
Combination[35]	Only technicians reporting actual use of aerosol boric acid dust (99 techs)[36]	Average Grams of product applied per day	1.51	± 1.10
		At 35.5% AI guarantee, average amount of AI in product applied per day	0.54	± 0.39

[28] Not all companies reported number of applications or split usage into commercial and residential sections.
[29] This mean is weighted to account for the 6 fold difference in number of technicians actually applying aerosol dust between the smaller and larger company.
[30] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[31] This mean is weighted by number of technicians to ensure companies with fewer technicians do not skew the overall mean.
[32] The standard deviation is calculated using the weighted mean
[33] The use recorded here is indicative of commercial aerosol dust applications with two companies reporting
[34] The use recorded here is indicative of residential aerosol dust applications with two companies reporting
[35] The Combination category (residential + commercial + unknown) was created to report aerosol dust for all four companies. This was done because one company did not split data into commercial and residential uses.
[36] The use of aerosol dust was measured by including only those technicians who applied aerosol dust

Section 2 – Aerosol Dust (con't)

Table 2.2 - Dust Uses (Aerosol Form)			
Maximum Usage per day - Maximum amount of product applied by one technician in one day			
Type of Application	**How often does this type of Maximum application occur?**	**Maximum amount in Grams**	**Amount of AI (in grams) at 35.5% guarantee**
Commercial	Occurs No more often than once every 18 months	765	272
Residential	Occurs less commonly than once in every two years	300	106.5

Maximum Means and Standard Deviation	**Average In grams**	**Standard Deviation**
Commercial Use Maximum Mean (Average of all commercial Maximums reported)	433	± 470
Residential Use Maximum Mean (Average of all residential maximums reported)	200	± 141

Table 2.3- Dust Uses (Aerosol Form)				
Mean Per Application (for Companies that Reported Total Number of Applications)				
	Type of Application		**Average In grams**[37]	**Standard Deviation**[38]
	Commercial	Average Grams of product applied	54.8	± 30.1
		At 35.5% AI guarantee - average amount of AI in product	19.4	± 10.7
	Residential	Average Grams of product applied	33.2	± 31.7
		At 35.5% AI guarantee - average amount of AI in product	11.8	± 11.3
	Combination	Average Grams of product applied	45.6	± 25.5
		At 35.5% AI guarantee - average amount of AI in product	16.2	± 9.00

[37] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the overall mean.
[38] Standard deviation uses the weighted mean

Table 2.4 – Dust Uses (Aerosol Form)	
Personal Protective Equipment Currently being worn while using Aerosol dust	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
	Hat
Eye Protection	Safety glasses
Respiratory protection	Half face respirator– Comfo mask or similar

CPMA recommends labels for aerosol dust include the addition of the above PPE to the aerosol dust labels.

Table 2.5 – Dust Uses (Aerosol Form)
Mitigation Measures and Special Practices for Aerosol dusts
4) Avoid using aerosol dusts in sensitive areas of hospitals and nursing homes largely due to the dust carrier odour.
5) Used the product in deep cracks and crevices or void spaces so there was no exposed material.
6) Any visible material would be removed after application.

Table 2.6 – Dust Uses (Aerosol Form)
General Notes from PMPs about where the product is used
Primarily used for cockroach control, in voids around pipes in bathrooms and kitchens of homes, plus in voids around piping in restaurants
Used in Cracks and Crevices
Used in Structural Voids

Section 2 – Aerosol Dust (con't)

Table 2.7 – Dust Uses (Aerosol Form)
General areas where the product is most commonly used (though use is not limited to these areas)
Commercial
Food Storage Areas
Inedible product areas of Meat packing plants
Food Processing Plants
Restaurants and other food handling establishments
Supermarkets
Warehouses and other Commercial and Industrial buildings
Hospital Kitchens
Nursing home kitchens
Hotels/Motels – Common areas and kitchens
Residential
Homes
Apartment s

Data Section 3 – Cockroach Gel/Paste Bait

Represented by PCP# 29169 – Professional Roach Bait (previously known as Pro Blue Diamond Roach Paste)
One company surveyed presented data for Gel/Paste Formulations containing Boric Acid. Thus, there is no standard deviation presented.

Cockroach Gel/Paste Summary Highlights - 33.3% Active Ingredient Guarantee

- n = 1 (Three companies do not use boric acid roach paste/gel)
- Years of data = 4 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 1 (one larger company)
- During the 4 years, sixty-five technicians used cockroach gel/paste
- Companies reporting number of applications made = 1
- The number of applications per tech per year[39] = 2.0
- Average grams per application[40] = 31.3 g
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

Table 3.1 – Cockroach Control (Gel/Paste Formulation)

Mean Usage Data and Standard Deviation

Type of Application	Cohort of Technicians used in Calculation		Average In grams	Standard Deviation[41]
Commercial	Only technicians reporting commercial gel/paste use for control of Cockroaches	Average Grams of product applied per day	0.26	n/a
		At 33.3% AI guarantee - average amount of AI in product applied per day	0.09	n/a
Residential	Only technicians reporting residential gel/paste use for control of cockroaches	Average Grams of product applied per day	0.03	n/a
		At 33.3% AI guarantee - average amount of AI in product applied per day	0.01	n/a
Combination	Only technicians reporting actual use of boric acid gel/paste for control of cockroaches [42]	Average Grams of product applied per day	0.16	n/a
		At 33.3% AI guarantee - average amount of AI in product applied per day	0.05	n/a

[39] No mean is presented because only one company provided data
[40] No mean is presented because only one company provided data
[41] Only one company reported cockroach gel/paste data. Therefore, there is no average or standard deviation
[42] Due to confidential concerns, # of technicians cannot be listed

Section 3 – Cockroach Gel/Paste Data (con't)

Table 3.2 - Cockroach Control (Gel/Paste Formulation)			
Maximum Usage per day - Maximum amount of product applied by one technician in one day			
Type of Application	**How often does this type of Maximum application occur?**	**Maximum amount in Grams**	**Amount of AI (in grams) at 33.3% guarantee**
Commercial Max Amount Applied	Occurs less commonly than once in every two years	240	79.9
Residential Max Amount Applied	Occurs less commonly than once in every two years	120	40.0
Maximum Means and Standard Deviation		**Average In grams[43]**	**Standard Deviation**
Commercial Use Maximum Mean (Average of all commercial Maximums reported)		n / a	n / a
Residential Use Maximum Mean (Average of all residential maximums reported)		n / a	n / a

Table 3.3- Cockroach Control (Gel/Paste Formulation)				
Mean Application Data (for Companies that Reported Total Number of Applications)				
	Type of Application		Average In grams	Standard Deviation[44]
	Commercial	Average Grams of product applied	30.7	n / a
		At 33.3% AI guarantee - average amount of AI in product	10.2	n / a
	Residential	Average Grams of product applied	42.9	n / a
		At 33.3% AI guarantee - average amount of AI in product	14.3	n / a
	Combination	Average Grams of product applied	31.3	n / a
		At 33.3% AI guarantee - average amount of AI in product	10.4	n / a

[43] Only one company reported cockroach gel/paste data. Therefore, there is no average or standard deviation
[44] Only one company reported cockroach gel/paste data. Therefore, there is no average or standard deviation

Section 3 – Cockroach Gel/Paste Data (con't)

Table 3.4 - Cockroach Control (Gel/Paste Formulation)	
Personal Protective Equipment Currently Being Worn While Using Gel/Paste Formulation	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
Eye Protection	Safety glasses
Respiratory protection	none

Recommendation: CPMA recommends labels for cockroach gel/past formulations include the addition of the above PPE to labels.

Table 3.5 - Cockroach Control (Gel/Paste Formulation)
Boric Acid and Its Salts – Species controlled
Cockroaches

Table 3.6 - Cockroach Control (Gel/Paste Formulation)
Mitigation Measures and Special Practices for Gel/Paste Formulation
1) Product placed so as to not come in contact with food or food contact surfaces
2) Excess application is removed so as to preclude access to children, pets or elderly
3) Restrict to void and crack and crevice application.

Table 3.7 – Cockroach Control (Gel/Paste Formulation)
General Notes from PMPs about where the product is used
Boric acid is the only effective and allowed insecticide for roaches in daycares and school in Quebec. Maxforce is not allowed. Other baits are ineffective.
To practice insect resistance management, Pest Management professionals need to be able to rotate AI's and bait matrices to prohibit cockroaches from developing resistance
Cracks/ crevices and voids around pipes where roaches congregate.
Gel baits allow pest management professionals to apply a least risk product in sensitive areas without risk to residents.
Gel baits/paste attract insect pests, thus speeding control with minimal disturbance of the home or commercial environment.

Section 3 – Cockroach Gel/Paste Data (con't)

Table 3.8 – Cockroach Control (Gel/Paste Formulation)
General areas where the product is most commonly used (though, use is not limited to these areas). Similar use sites have been combined, however, each product was only recorded from labeled use sites.
Commercial
Food Storage Areas
Food and feed handling and processing establishments
Food Processing Plants
Beverage Plants
Factories
Restaurants (food service establishments) and other food handling establishments
Supermarkets, Grocery Stores
Warehouses and other Commercial and Industrial buildings
Hospitals, including semi-sensitive areas
Nursing homes, including semi-sensitive areas
Hotels/Motels – Common areas and kitchens
Bakeries
Schools
Kennels, Zoos
Offices
Transportation equipment – Busses, trains
Garages
Residential
Homes
Attics
Garages
Apartments
Mobile homes

Data Section 4 – Ant Gel/Paste Bait

Represented by PCP# 20478- Drax, PCP# 26399- DraxPF, PCP# 25353 – Drax Dual, PCP# 29055 – Gourmet Liquid Ant Bait C, PCP# 29056- Gourmet Liquid Ant Bait CR. Products are registered at AI guarantees of 5.0 % to 5.4 %. CPMA will use the higher number, 5.4% to preclude under estimating the exposure.

Ant Gel/Paste Bait Summary Highlights – 5.4% Active Ingredient Guarantee

- n = 4 companies
- Years of data = 14 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 3 (one large and two smaller companies)
- Companies reporting total number of applications made[45] = 2
- The mean number of applications per tech per year[46] = 6.7 ± 0.8 (for a cumulative 7 year period)
- Average grams per application[47] = 14.9 ± 0.0 g
- During the 14 years, three hundred and seven technicians (of the total cohort of 310 technicians) recorded use of ant gel/paste.
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

Table 4.1 – Ant Control (Gel/Paste Formulation)

Mean Usage Data and Standard Deviation

Application Type	Cohort of Technicians		Average In grams[48]	Standard Deviation[49]
Commercial	Only technicians reporting commercial gel/paste use for control of ants	Average Grams of product applied per day	0.27	± 0.32
		At 5.4% AI guarantee - average amount of AI in product applied per day	0.10	± 0.11
Residential	Only technicians reporting residential gel/paste use for control of ants	Average Grams of product applied per day	0.09	± 0.22
		At 5.4% AI guarantee - average amount of AI in product applied per day	0.01	± 0.01
Combination	Only technicians reporting actual use of boric acid gel/paste for control of ants	Average Grams of product applied per day	0.47	± 0.67
		At 5.4% AI guarantee - average amount of AI in product applied per day	0.03	± 0.04

[45] Not all companies reported number of applications or split usage into commercial and residential sections
[46] The mean is weighted to account for the > 50 fold difference in number of technicians between the smallest and the largest company.
[47] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the data.
[48] This mean is weighted by number of technicians to ensure companies with fewer technicians do not skew the overall mean.
[49] The standard deviation is calculated using the weighted mean

Table 4.2 – Ant Control (Gel/Paste Formulation)			
Maximum Usage per day - Maximum amount of product applied by one technician in one day			
Type of Application	**How often does this type of Maximum application occur?**	**Maximum amount in Grams**	**Amount of AI (in grams) at 5.4% guarantee**
Commercial Max Amount Applied	Occurs less commonly than once in every two years	300	16.2
Residential Max Amount Applied	Occurs less commonly than once in every two years	185	9.99
Maximum Means and Standard Deviation		**Average In grams[50]**	**Standard Deviation[51]**
Commercial Use Maximum Mean (Average of all commercial Maximums reported)		n / a	n / a
Residential Use Maximum Mean (Average of all residential maximums reported)		n / a	n / a

Table 4.3- Ant Control (Gel/Paste Formulation)				
Mean Application Data (for Companies that Reported Total Number of Applications)				
	Type of Application		**Average In grams[52]**	**Standard Deviation[53]**
	Commercial [54]	Average Grams of product applied	15.0	n / a
		At 5.4% AI guarantee - average amount of AI in product	0.27	n / a
	Residential	Average Grams of product applied	19.5	± 4.61
		At 5.4% AI guarantee - average amount of AI in product	1.05	± 0.25
	Combination	Average Grams of product applied	16.6	± 1.69
		At 5.4% AI guarantee - average amount of AI in product	0.90	± 0.09

[50] Only one company reported a maximum amount of ant gel/paste used. Thus, neither an average maximum, nor a standard deviation can be reported.
[51] Only one company reported a maximum amount of ant gel/paste used. Thus, neither an average maximum, nor a standard deviation can be reported.
[52] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the overall mean.
[53] The standard deviation uses the weighted mean.
[54] Only one company reported ant gel/paste data for the residential scenario. Therefore, there is no standard deviation for this use pattern.

Table 4.4 - Ant Control (Gel/Paste Formulation)	
Personal Protective Equipment Currently Being Worn While Using Gel/Paste Formulation	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
Eye Protection	Safety glasses
Respiratory protection	none

Recommendation: CPMA recommends labels for ant gel/past formulations include the addition of the above PPE to labels.

Table 4.4 – Ant Control (Gel/Paste Formulation)
Boric Acid and Its Salts – Species controlled
Ants

Table 4.6 - Ant Control (Gel/Paste Formulation)
Mitigation Measures and Special Practices for Gel/Paste Formulation
1) Product placed so as to not come in contact with food or food contact surfaces
2) Excess application is removed so as to preclude access to children, pets or elderly
3) Application is restricted to void, crack and crevice application.
4) Product is placed where kids/pets/ elderly will not find the product and pick it up.
5) Instructions are provided to the residents to ensure they do not bother or touch the product should it be found or become visible

Table 4.7 – Ant Control (Gel/Paste Formulation)
General Notes from PMPs about where the product is used
Boric acid gels/pastes are very important in ant control as they allow precise application into cracks and crevices and voids. In this manner these products are suitable in effectively all scenarios, including patient rooms in hospitals.
Cracks/ crevices and voids around pipes where ants like to enter a structure.
Gel baits allow pest management professionals to apply a least risk product in sensitive areas without risk to residents.
Gel baits/paste attract insect pests, thus speeding control with minimal disturbance of the home or commercial environment.

Table 4.8 – Ant Control (Gel/Paste Formulation)
General areas where the product is most commonly used (though, use is not limited to these areas). Similar use sites have been combined, however, each product was only recorded from labeled use sites.
Commercial
Commercial Structures
Restaurants (food service establishments) and other food handling establishments
Supermarkets, Grocery Stores
Warehouses and other Commercial and Industrial buildings
Hospitals, including semi-sensitive areas
Nursing homes, including semi-sensitive areas
Hotels/Motels – Common areas and kitchens
Schools
Kennels, Zoos
Offices
Residential
Homes
Apartments
Mobile homes

Data Section 5 – Granular Bait

Represented by PCP# - 26565, Niban

Granular Bait Summary Highlights - 5% Active Ingredient Guarantee

- n = 2 companies (Of the 4 companies that submitted data, two were excluded from this measurement as one company does not use granular bait, and one company used granular bait only one time in the last four years)
- Years of data = 4 (This is a cumulative measure of years of data submitted by the n companies.)
- Companies able to split data into residential and commercial applications = 1 (one smaller company)
- Companies reporting number of applications made[55] = 1
- One company average number of applications per tech per year[56] = 10.7 applications
- One company's average grams per application[57] = 250 g
- During the 4 years, eighty-three technicians (of the total cohort of 310 technicians) recorded use of granular bait
- So that the data for the company not providing number of applications could be incorporated and analyzed, the remainder of the data is presented in grams applied by a technician per day.

Table 5.1 –Granular Bait

Mean Usage Data and Standard Deviation

Application Type	Cohort of Technicians		Average In grams[58]	Standard Deviation [59]
Commercial[60] [61]	Only technicians reporting commercial granular bait application	Average Grams of product applied per day	0.00	n/a
		At 5.0% AI guarantee - average amount of AI in product applied per day	0.00	n/a
Residential	Only technicians reporting residential granular bait applications[62]	Average Grams of product applied per day	7.32	n/a
		At 5.0% AI guarantee - average amount of AI in product applied per day	0.37	n/a
Combination[63]	Only technicians reporting actual granular bait applications (83 techs)	Average Grams of product applied per day	2.22	± 5.10
		At 5.0% AI guarantee - average amount of AI in product applied per day	0.11	± 0.26

[55] Not all companies reported number of applications or split usage into commercial and residential sections
[56] No mean is presented because only one company provided data. This is data for one small company, so it is possible the data is not valid for an industry wide assessment.
[57] No mean is presented because only one company provided data. This is data for one small company, so it is possible the data is not valid for an industry wide assessment.
[58] This mean is weighted by number of applications to ensure companies with fewer applications do not skew the overall mean.
[59] The standard deviation uses the weighted mean.
[60] One application of 0.004kg, designated as commercial was made in 4 years. Thus, the measurement reflects 0.00 g.
[61] Only one company was able to provide commercial data. Thus, there is no standard deviation reported commercial uses of granular bait
[62] Only one company was able to provide residential data. Thus, there is no standard deviation reported residential uses of granular bait
[63] Includes data split into commercial and residential classes as well as data from companies that could not be split into commercial and residential classes

Table 5.**2** – Granular bait			
Maximum Usage per day - Maximum amount of product applied by one technician in one day			
Type of Application	**How often does this type of Maximum application occur?**	**Maximum amount in Grams**	**Amount of AI (in grams) at 5.0% guarantee**
Commercial Max Amount Applied	Occurs less commonly than once in every two years	4	0.02
Residential Max Amount Applied	Once per week, only in late spring and summer months, for ant control.	500	25
Maximum Means and Standard Deviation		**Average In grams**	**Standard Deviation**
Commercial Use Maximum Mean (Average of all commercial Maximums reported)[64]		n / a	n/a
Residential Use Maximum Mean (Average of all residential maximums reported)		167	± 289

Table 5.3- Granular Bait				
Mean amount per Application (for Companies that Reported Total Number of Applications)				
	Type of Application		Average In grams	Standard Deviation
	Commercial[65,66]	Average Grams of product applied	0.00	n / a
		At 5.0% AI guarantee - average amount of AI in product	0.00	n / a
	Residential	Average Grams of product applied	250	n / a
		At 5.0% AI guarantee - average amount of AI in product	12.5	n / a
	Combination [67]	Average Grams of product applied	n / a	n / a
		At 5.0% AI guarantee - average amount of AI in product	n / a	n / a

[64] One company reported a maximum amount of granular bait for the commercial class. Thus, neither an average maximum, nor a standard deviation can be reported.
[65] Only one company was able to provide residential data. Thus, there is no standard deviation reported commercial uses of granular bait
[66] One application of 0.004kg, designated as commercial was made in 4 years. Thus, the measurement reflects 0.00 g.
[67] Only one company provided data that included number of applications. Therefore, while combination class mean usage data can be provided for granular bait, mean amount per application would be no different than the residential data.

Table 5.4 – Granular Bait	
Personal Protective Equipment Currently Being Worn While Using Gel/Paste Formulation	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
Eye Protection	Safety glasses
Respiratory protection	Dust/mist filter mask

Recommendation: CPMA recommends labels for granular bait formulations include the above PPE on the label.

Table 5.5 – Granular Bait
Boric Acid and Its Salts – Species controlled
Ants
Mole crickets

Table 5.6 – Granular Bait
Mitigation Measures and Special Practices for Gel/Paste Formulation
1) Product placed so as to not come in contact with food or food contact surfaces
2) Excess application is removed so as to preclude access to children, pets or elderly
3) Application is restricted to void, crack and crevice application.
4) Product is placed where kids/pets/ elderly will not find the product and pick it up.
5) Instructions are provided to the residents to ensure they do not bother or touch the product should it be found or become visible
6) Interior applications are within void spaces to prevent potential displacement within the structure.
7) Product is used in voids or tamper resistant stations when used indoors. Outdoors, granular baits may be placed in tamper resistant stations to mitigate exposure to non-targets.

Table 5.7 – Granular Bait
General Notes from PMPs about where the product is used
This formulation is the only exterior granular bait available. So, when there are exterior pest issues, this is an important part of the toolbox.
Place in voids around pipes where ants like to enter a structure.
Baits are used in voids where ants are harboring and travelling.
For outdoor use around building foundations and under porches to control ants and mole crickets.
On exterior, also used where ants are foraging, traveling and entering buildings.
Baits attract insect pests, thus speeding control with minimal disturbance of the home or commercial environment.

Table 5.8 – Granular Bait
General areas where the product is most commonly used (though, use is not limited to these areas). Similar use sites have been combined, however, each product was only recorded from labeled use sites.
Commercial
Warehouses and other Commercial and Industrial buildings
Residential
Homes
Garages
Apartments
Mobile homes

Data Section 6 – Liquid

Of the companies that responded to our survey, none recorded use of liquid boric acid products in the last 3 to 4 years. (This of course excludes the liquid ant baits, like Gourmet ant bait, which were included in the ant gel/pastes section.)
However, it must be noted that some companies had records of Timbor, PCP # 24091 recorded in the dust section. This is because the product is sold in a dust form. At time of use, it can either be applied as a dust or formulated into a 10% or 15% solution.

Once small company recorded approximately 10% of their dust use was Timbor. None of the other companies, though, had more than 1% of their dust use attributable to Timbor.

CPMA is continuing to attempt to find companies that can provide electronic records of liquid use data to remove the uncertainty of using assumptions d, e, g, h, I, j and l and m in Appendix IV.

Table 6.1 – Liquid Applications of Boric Acid	
Personal Protective Equipment that should be added to the label	
Dermal Protection	Chemical resistant gloves
	Long sleeved shirt
	Long pants
	Socks
	shoes
	Hat
	Coveralls
Eye Protection	Safety glasses, possibly goggles (depending on the situation)
Respiratory protection	Half face respirator– Comfo mask or similar

Recommendation: CPMA recommends all labels for products that can be used as a liquid contain a requirement for the above PPE.

Table 6.2 – Liquid applications of Boric Acid
Boric Acid and Its Salts – Species controlled
Termites
Wood-boring beetles
Fungi

Table 6.3 – Liquid applications of Boric Acid
Mitigation Measures and Special Practices for Gel/Paste Formulation
1) Product placed so as to not come in contact with food or food contact surfaces
2) Excess application is removed (wiped up) to preclude access to children, pets or elderly
3) Applications are generally made to surfaces that will either be covered (such as in construction) or in areas that are not exposed to non-targets, i.e. in a crawlspace.
4) Special injection tips are used to ensure product is delivered to the area where it is needed to control insects, etc.

Table 6.4 – Liquid Applications of Boric Acid
General Notes from PMPs about where the product is used
The 10% solution is used when past pest activity has occurred and prevention of future activity is warranted.
Boric Acid can be used as a foam
Drilling and injecting the liquid solution under pressure into sound wood or until runoff is observed.
Foam treatment of accessible wood surfaces

Table 6.5 – Liquid Applications of Boric Acid
General areas where the product is most commonly used (though, use is not limited to these areas). Similar use sites have been combined, however, each product was only recorded from labeled use sites.
Commercial
Warehouses and other Commercial and Industrial buildings
Wooden members that are infested with termites, wood destroying beetles or destructive fungi
Residential
Homes
Garages
Apartments
Mobile homes