UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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MEMORANDUM

SUBJECT: Preliminary Ecological Risk Assessment for Fipronil Use on Tennessee Nursery Stock, Fire Ant Quarantine Considerations

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In March 2007, members of the Environmental Fate and Effects Division met with members of the Registration Division, the United States Department of Agriculture, and local Tennessee agriculture officials to discuss a potential expansion of the Animal Plant Health Inspection Service fire ant quarantine chemical control methods to include fipronil granules applied to nursery stock.

This potential use would involve the application of fipronil granules twice in a given application year, minimally 7 days apart, and at a per application rate of 0.0125 lb a.i./acre. The areas to be treated would be mature shrub and tree nursery stock ready for harvest. The areas would be expected to include some vegetative understory. Because applications would only be made to stock mature enough to harvest, a single treated plot would not receive fipronil treatments in consecutive years but on a cycle of one year in every 3 to 5 years.

At the March 2007 meeting, EFED agreed to conduct a preliminary analysis of risks to provide USDA with a initial picture of how a screening–level risk assessment might appear. The results

in recent fipronil risk assessments as being of main acute or chronic risk concern.

This preliminary analysis does not substitute for the final conclusions of a formal risk assessment process in support of a registration request.

Estimated Exposures for Aquatic and Terrestrial Animals

To estimate exposures EFED considered fipronil physical/chemical and environmental fate properties summarized in other fipronil risk assessments of 2007. Only parent fipronil is considered in this preliminary look at the risk picture as previous 2007 assessments indicate that fipronil-alone evaluation is largely representative of the risks expected

Aquatic Animals

For aquatic animals, EFED conducted PRZM/EXAMS modeling with the use description in the paragraphs above PLUS a scenario assuming application to a given use site every year rather than once every 3 years. The meteorological, soil, and agronomic practices for the nursery use were assumed to be equivalent to the EFED North Carolina Apple use scenario, which is not a bare ground scenario and includes understory vegetation. The results from this modeling effort are as follows for 1 in 10 year return frequency estimates of surface water concentrations. Files supporting this model run are included as Appendix A.

Scenario	Peak 1-day (ug/L)	21-day Average (ug/L)	60-day Average (ug/L)
Normal 30 year simulation (applied every year)	0.103	0.069	0.046
Modified one application year in a 3 year rotation (applied every 3rd year)	0.102	0.069	0.045

Terrestrial Animals

Fipronil exposure for a granular pesticide has usually been modeled as total potential available pesticide mass per square foot of treatment area. The results of this approach appear in the T-TEX model output for a single use of fipronil granule in Appendix B of this document.

In addition the risk discussion presents an analysis of how many granules may constitute an acute toxic risk to birds and mammals if directly consumed.

Effects Endpoints

Previous 2007 risk assessments for fipronil have summarized the available acute, chronic, and field/mesocosm data for effects on non-target organisms. This preliminary evaluation of possible risks is confined to aquatic invertebrates, fish, birds and mammals and the following acute and chronic endpoints were extracted from previous risk assessments.

Chemical	Acute Toxicity Threshold ug/L	Chronic Toxicity Threshold ug/L	Acute Threshold Origin	Chronic Threshold Origin
Freshwater Fish				
Fipronil	83	6.6	1	1
Freshwater Invertebrates				
Fipronil	0.22	0.011	1	2
Birds				
Fipronil	LD_{50} 11.3 mg/kg-bw LC_{50} 48 mg/kg-diet	NOEC 10 mg/kg-diet	1	1
Mammals				
Fipronil	LD_{50} 97 mg/kg-bw	NOEC 30 mg/kg-diet NOEL 2.64 mg/kg-bw	1	1

1 most sensitive species tested
2 lowest acute value divided by parent fipronil acute:chronic ratio for *D. magna*

Risk Estimations

Aquatic Animals

The following table presents the results of risk quotient calculation for aquatic organisms

Animal	Peak 1-day (ug/L)	21-day Average (ug/L)	60-day Average (ug/L)	Acute Effects Endpoint	Chronic Effects Endpoint	Acute RQ	Chronic RQ	Identified Concerns
Normal 30 year simulation (applied every year)								
fish	0.103	0.069	0.046	83	6.6	<0.05	<1	none
invertebrate				0.22	0.01	0.47	6.9	RU,LS,C
Modified 3 year rotation (applied every 3rd year)								
fish	0.102	0.069	0.045	83	6.6	<0.05	<1	none
invertebrate				0.22	0.01	0.46	6.9	RU,LS,C

RU = acute RQ exceeds restricted use LOC
LS = acute RQ exceeds federally-listed threatened/endangered species LOC
C = chronic RQ exceeds chronic effects LOC for listed and non-listed species

Terrestrial Animals

The following table presents the results of the acute risk quotient calculations for birds and mammals. The original risk quotients are extracted from the T-REX model run as reported in Appendix B.

Animal	Risk Quotient	Identified Concerns
20 g bird	0.80	A, RU, LS
100 g bird	0.13	LS
1000 g bird	<0.05	none
15 g ammal	<0.05	none
35 g mammal	<0.05	none
1000 g mammal	<0.05	none

A= acute RQ exceeds non-listed species acute LOC
RU = acute RQ exceeds restricted use LOC
LS = acute RQ exceeds federally-listed threatened/endangered species LOC

Risk Discussion

Aquatic Animals

This preliminary risk assessment has identified that there could potentially be acute and chronic concerns for aquatic invertebrates from this use. In neither exposure scenario were acute risk quotients high enough to trigger non-listed species concerns so the majority of concerns are associated with potential listed species impacts. Chronic risks are above Agency concern levels and are expected for both listed and non-listed aquatic invertebrates.

Terrestrial Animals

The risk quotients results do not indicate any concern for acute risks to mammals. However, small listed and non-listed birds may be subject to acute risks at levels exceeding Agency concern.

Chipco 61748A, TopChoice Select, and Chipco Choice broadcast fire ant granular applications are of sufficiently low application rate as to preclude LD50/ft^2 RQ-based concerns for acute effects associated with parent and degradates in all but the smallest of birds (listed and non-listed species at 20 g body weight, and listed species at 100 g body weight). Chipco 61748A and TopChoice are 0.0143% a.i., which corresponds to 0.143 g a.i./kg granules or 0.143 mg a.i/g. This would mean that even small birds would have to consume extremely large proportions of their body weight in a day as granules to achieve toxic doses. It is very unlikely that this will occur for such a non-nutritive substrate. However, Chipco Choice is 0.1% active ingredient or 1000 mg a.i./kg of granule or 1 mg a.i./g and the mass in the formulation would suggest that there is a potential for small birds to consume sufficient granular mass to pose an acute risk to these birds. The mass of granules needed to be consumed in order to achieve a 50% probability of mortality is presented below.

Animal Mass(kg)	Mass fipronil /animal at LD50*	Mass of granules required to reach 50% chance of mortality**
0.02 (bird)	0.1628 mg	0.1-0.2 g
0.1 (bird)	1.036 mg	1-2 g
1.0 (bird)	14.64 mg	14-15 g
0.015 (mammal)	3.20 mg	3-4 g
0035 (mammal)	6.04 mg	6-7 g
1.0 (mammal)	74.61 mg	74-75 g

* adjusted LD50 from T-REX multiplied by bw in kg

** mass fipronil/animal at LD50 level/ 1 mg fipronil/g granules

It should be noted that this method does not allow for quantified chronic risks. Therefore any future risk assessment will have to consider alternative methods to discuss the potential for such risks.

Federally Listed Threatened and Endangered Species

The preliminary nature of this risk evaluation precludes analysis of co-occurrence of use sites with taxa of concern. At this early stage of assessment, the results of this evaluation can only provide some insight into the types of taxa potentially affected either directly or indirectly.

The assessment has identified that aquatic invertebrates may be directly affected. This would also suggest that mammals, birds, reptiles, amphibians, and fish may be indirectly affects due to impairment of invertebrate-based food supplies.

The assessment suggests that small listed birds may be potential affected through direct toxic effects of fipronil. The preliminary assessment has not excluded the possibility of direct chronic effects to birds because the methods employed cannot quantify such risks. Direct effects to birds may potentially indirectly affect listed reptiles, amphibians, mammals through disruption of food supply. Moreover, direct effects on birds may have the potential to indirectly affect plants through disruption of pollination or seed dispersal.

Though not quantified by a standard assessment method, listed terrestrial invertebrates may be directly affected by virtue of the fact that fipronil is an insecticide. This, in turn, would suggest a potential for indirect effects to birds, mammals, reptiles, amphibians, and fish through disruption of food supply or indirect impacts to plants through disruption of pollinators or seed vectors.

APPENDIX A: PRZM/EXAMS Files

3 Year Rotation- Parent Fipronil- Input File

```
NC Apple 8/07/2001
"Henderson County MLRA 130; Metfile: W03812.dvf (old: Met130.met),"
*** Record 3:
    0.76     0.2       0      17       1       3
*** Record 6 -- ERFLAG
       4
*** Record 7:
     0.2    3.04       1      10               3      12     354
*** Record 8
       1
*** Record 9
       1    0.25     150      90       3  84  79  82       0     425
*** Record 9a-d
       1      24
0101 1601 0102 1602 0103 1603 0104 1604 0105 1605 0106 1606 0107 1607 0108 1608
.011 .012 .017 .018 .025 .031 .035 .041 .045 .046 .048 .048 .046 .043 .043 .045
.023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023 .023
0109 1609 0110 1610 0111 1611 0112 1612
.049 .052 .055 .057 .008 .009 .010 .010
.023 .023 .023 .023 .023 .023 .023 .023
*** Record 10 -- NCPDS, the number of cropping periods
      26
*** Record 11
  070465  030565  251065       1
  070466  030566  251066       1
  070467  030567  251067       1
  070468  030568  251068       1
  070469  030569  251069       1
  070470  030570  251070       1
  070471  030571  251071       1
  070472  030572  251072       1
  070473  030573  251073       1
  070474  030574  251074       1
  070475  030575  251075       1
  070476  030576  251076       1
  070477  030577  251077       1
  070478  030578  251078       1
  070479  030579  251079       1
  070480  030580  251080       1
  070481  030581  251081       1
  070482  030582  251082       1
  070483  030583  251083       1
  070484  030584  251084       1
  070485  030585  251085       1
  070486  030586  251086       1
  070487  030587  251087       1
  070488  030588  251088       1
  070489  030589  251089       1
  070490  030590  251090       1
*** Record 12 -- PTITLE
Fipronil - 2 applications @ 0.014 kg/ha
*** Record 13
      52       1       0       0
*** Record 15 -- PSTNAM
Fipronil
*** Record 16
  010465  0 1  0.1 0.014    1    0
  080465  0 1  0.1 0.014    1    0
  010466  0 1  0.1 0.014    1    0
  080466  0 1  0.1 0.014    1    0
  010467  0 1  0.1 0.014    1    0
  080467  0 1  0.1 0.014    1    0
  010468  0 1  0.1 0.014    1    0
  080468  0 1  0.1 0.014    1    0
  010469  0 1  0.1 0.014    1    0
  080469  0 1  0.1 0.014    1    0
```

```
  010470  0 1  0.1 0.014    1    0
  080470  0 1  0.1 0.014    1    0
  010471  0 1  0.1 0.014    1    0
  080471  0 1  0.1 0.014    1    0
  010472  0 1  0.1 0.014    1    0
  080472  0 1  0.1 0.014    1    0
  010473  0 1  0.1 0.014    1    0
  080473  0 1  0.1 0.014    1    0
  010474  0 1  0.1 0.014    1    0
  080474  0 1  0.1 0.014    1    0
  010475  0 1  0.1 0.014    1    0
  080475  0 1  0.1 0.014    1    0
  010476  0 1  0.1 0.014    1    0
  080476  0 1  0.1 0.014    1    0
  010477  0 1  0.1 0.014    1    0
  080477  0 1  0.1 0.014    1    0
  010478  0 1  0.1 0.014    1    0
  080478  0 1  0.1 0.014    1    0
  010479  0 1  0.1 0.014    1    0
  080479  0 1  0.1 0.014    1    0
  010480  0 1  0.1 0.014    1    0
  080480  0 1  0.1 0.014    1    0
  010481  0 1  0.1 0.014    1    0
  080481  0 1  0.1 0.014    1    0
  010482  0 1  0.1 0.014    1    0
  080482  0 1  0.1 0.014    1    0
  010483  0 1  0.1 0.014    1    0
  080483  0 1  0.1 0.014    1    0
  010484  0 1  0.1 0.014    1    0
  080484  0 1  0.1 0.014    1    0
  010485  0 1  0.1 0.014    1    0
  080485  0 1  0.1 0.014    1    0
  010486  0 1  0.1 0.014    1    0
  080486  0 1  0.1 0.014    1    0
  010487  0 1  0.1 0.014    1    0
  080487  0 1  0.1 0.014    1    0
  010488  0 1  0.1 0.014    1    0
  080488  0 1  0.1 0.014    1    0
  010489  0 1  0.1 0.014    1    0
  080489  0 1  0.1 0.014    1    0
  010490  0 1  0.1 0.014    1    0
  080490  0 1  0.1 0.014    1    0
*** Record 17
      0       0       0
*** Record 19 -- STITLE
Hayesville Loam; HYDG: C
*** Record 20
    150          0   0   1   0   0   0   0   0   0
*** Record 26
      0       0       0
*** Record 30
      4     727
*** Record 33
      4
      1      10     1.3   0.392       0       0       0
       0.0054150.005415       0
            0.1   0.392   0.192    0.58       0
      2       6     1.3   0.392       0       0       0
       0.0054150.005415       0
              2   0.392   0.192    0.58       0
      3      84     1.3   0.475       0       0       0
       0.0054150.005415       0
              2   0.475   0.275   0.116       0
      4      50     1.3   0.259       0       0       0
       0.0054150.005415       0
              5   0.259   0.109   0.058       0
***Record 40
      0
           YEAR      10           YEAR      10           YEAR      10   1
      1
      1  -----
      7    YEAR
   PRCP    TCUM   0   0
```

RUNF	TCUM	0	0	
INFL	TCUM	1	1	
ESLS	TCUM	0	0	1.0E3
RFLX	TCUM	0	0	1.0E5
EFLX	TCUM	0	0	1.0E5
RZFX	TCUM	0	0	1.0E5

3 Year Rotation- Parent Fipronil-Output File

WATER COLUMN DISSOLVED CONCENTRATION (PPB)

YEAR	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
1965	.030	.027	.019	.014	.011	.003
1966	.066	.060	.044	.027	.020	.005
1967	.033	.031	.024	.018	.014	.004
1968	.017	.015	.012	.007	.006	.002
1969	.067	.061	.043	.026	.019	.005
1970	.033	.031	.022	.012	.009	.003
1971	.023	.021	.016	.010	.008	.002
1972	.092	.084	.064	.036	.026	.007
1973	.192	.176	.132	.082	.060	.016
1974	.102	.093	.069	.048	.036	.010
1975	.090	.083	.065	.039	.028	.007
1976	.105	.096	.070	.046	.033	.009
1977	.100	.091	.064	.038	.028	.007
1978	.038	.034	.030	.018	.013	.003
1979	.079	.072	.058	.041	.030	.008
1980	.096	.088	.062	.040	.030	.008
1981	.027	.025	.019	.011	.008	.002
1982	.021	.019	.014	.009	.007	.002
1983	.085	.077	.058	.039	.029	.008
1984	.063	.057	.042	.032	.025	.007
1985	.018	.017	.013	.008	.006	.002
1986	.021	.019	.014	.007	.006	.002
1987	.078	.071	.049	.027	.025	.007
1988	.047	.043	.030	.017	.012	.004
1989	.052	.048	.034	.020	.015	.004
1990	.040	.036	.028	.017	.013	.004

SORTED FOR PLOTTING

PROB	PEAK	96 HOUR	21 DAY	60 DAY	90 DAY	YEARLY
.032	.192	.176	.132	.082	.060	.016
.065	.105	.096	.070	.048	.036	.010
.097	.102	.093	.069	.046	.033	.009
.129	.100	.091	.065	.041	.030	.008
.161	.096	.088	.064	.040	.030	.008
.194	.092	.084	.064	.039	.029	.008
.226	.090	.083	.062	.039	.028	.007
.258	.085	.077	.058	.038	.028	.007
.290	.079	.072	.058	.036	.026	.007
.323	.078	.071	.049	.032	.025	.007
.355	.067	.061	.044	.027	.025	.007
.387	.066	.060	.043	.027	.020	.005
.419	.063	.057	.042	.026	.019	.005
.452	.052	.048	.034	.020	.015	.004
.484	.047	.043	.030	.018	.014	.004
.516	.040	.036	.030	.018	.013	.004
.548	.038	.034	.028	.017	.013	.004
.581	.033	.031	.024	.017	.012	.003
.613	.033	.031	.022	.014	.011	.003
.645	.030	.027	.019	.012	.009	.003
.677	.027	.025	.019	.011	.008	.002
.710	.023	.021	.016	.010	.008	.002
.742	.021	.019	.014	.009	.007	.002
.774	.021	.019	.014	.008	.006	.002
.806	.018	.017	.013	.007	.006	.002
.839	.017	.015	.012	.007	.006	.002

.871	.000	.000	.000	.000	.000	.000
.903	.000	.000	.000	.000	.000	.000
.935	.000	.000	.000	.000	.000	.000
.968	.000	.000	.000	.000	.000	.000
1/10	.102	.093	.069	.045	.033	.009

MEAN OF ANNUAL VALUES = .005

STANDARD DEVIATION OF ANNUAL VALUES = .003

UPPER 90% CONFIDENCE LIMIT ON MEAN = .006

Annual Applications-Parent Fipronil- Output File

stored as FIPTENN.out
Chemical: Fipronil
PRZM environment: NCappleC.txt modified Satday, 12 October 2002 at 16:09:36
EXAMS environment: pond298.exv modified Thuday, 29 August 2002 at 16:33:30
Metfile: w03812.dvf modified Wedday, 3 July 2002 at 09:05:50
Water segment concentrations (ppb)

Year	Peak	96 hr	21 Day	60 Day	90 Day	Yearly
1965	0.03029	0.02748	0.01932	0.01363	0.01079	0.002941
1966	0.06557	0.06002	0.04449	0.0273	0.01987	0.005285
1967	0.03344	0.03061	0.02443	0.01844	0.01398	0.003818
1968	0.01706	0.01541	0.01184	0.007055	0.005523	0.001782
1969	0.06668	0.06078	0.0434	0.02577	0.01873	0.004916
1970	0.03283	0.03083	0.02194	0.01201	0.008831	0.002622
1971	0.02313	0.02105	0.01618	0.01045	0.008026	0.002244
1972	0.09233	0.08428	0.06393	0.03627	0.0262	0.006866
1973	0.1919	0.1759	0.1324	0.08225	0.0601	0.01641
1974	0.1022	0.09284	0.06912	0.04788	0.03625	0.009784
1975	0.08997	0.0827	0.06502	0.03872	0.02789	0.007322
1976	0.105	0.09596	0.06967	0.0458	0.03342	0.008836
1977	0.1002	0.09123	0.06399	0.03779	0.02789	0.007472
1978	0.03787	0.03443	0.0298	0.01814	0.0131	0.003463
1979	0.07934	0.07239	0.05766	0.04077	0.0302	0.008022
1980	0.09614	0.08837	0.0618	0.03985	0.03011	0.007908
1981	0.02734	0.02488	0.01906	0.01136	0.008375	0.002234
1982	0.02066	0.01887	0.0139	0.00928	0.006997	0.001886
1983	0.08451	0.07732	0.05844	0.03905	0.02917	0.007689
1984	0.0625	0.05744	0.04167	0.0323	0.02474	0.006677
1985	0.01823	0.01654	0.01253	0.007778	0.005721	0.001819
1986	0.02099	0.01909	0.01385	0.007292	0.005529	0.001705
1987	0.07849	0.07083	0.04911	0.02652	0.02479	0.007038
1988	0.04707	0.04288	0.03009	0.01714	0.0125	0.003641
1989	0.05234	0.04761	0.03397	0.02018	0.01475	0.004006
1990	0.04002	0.03642	0.02839	0.01746	0.01308	0.003531

Sorted results

Prob.	Peak	96 hr	21 Day	60 Day	90 Day	Yearly
0.037037037037037	0.1919	0.1759	0.1324	0.08225	0.0601	0.01641
0.0740740740740741	0.105	0.09596	0.06967	0.04788	0.03625	0.009784
0.111111111111111	0.1022	0.09284	0.06912	0.0458	0.03342	0.008836
0.148148148148148	0.1002	0.09123	0.06502	0.04077	0.0302	0.008022
0.185185185185185	0.09614	0.08837	0.06399	0.03985	0.03011	0.007908
0.222222222222222	0.09233	0.08428	0.06393	0.03905	0.02917	0.007689
0.259259259259259	0.08997	0.0827	0.0618	0.03872	0.02789	0.007472
0.296296296296296	0.08451	0.07732	0.05844	0.03779	0.02789	0.007322
0.333333333333333	0.07934	0.07239	0.05766	0.03627	0.0262	0.007038
0.37037037037037	0.07849	0.07083	0.04911	0.0323	0.02479	0.006866
0.407407407407407	0.06668	0.06078	0.04449	0.0273	0.02474	0.006677
0.444444444444444	0.06557	0.06002	0.0434	0.02652	0.01987	0.005285
0.481481481481481	0.0625	0.05744	0.04167	0.02577	0.01873	0.004916
0.518518518518518	0.05234	0.04761	0.03397	0.02018	0.01475	0.004006
0.555555555555556	0.04707	0.04288	0.03009	0.01844	0.01398	0.003818
0.592592592592593	0.04002	0.03642	0.0298	0.01814	0.0131	0.003641
0.62962962962963	0.03787	0.03443	0.02839	0.01746	0.01308	0.003531

0.666666666666667	0.03344	0.03083	0.02443	0.01714	0.0125	0.003463	
0.703703703703704	0.03283	0.03061	0.02194	0.01363	0.01079	0.002941	
0.740740740740741	0.03029	0.02748	0.01932	0.01201	0.008831	0.002622	
0.777777777777778	0.02734	0.02488	0.01906	0.01136	0.008375	0.002244	
0.814814814814815	0.02313	0.02105	0.01618	0.01045	0.008026	0.002234	
0.851851851851852	0.02099	0.01909	0.0139	0.00928	0.006997	0.001886	
0.888888888888889	0.02066	0.01887	0.01385	0.007778	0.005721	0.001819	
0.925925925925926	0.01823	0.01654	0.01253	0.007292	0.005529	0.001782	
0.962962962962963	0.01706	0.01541	0.01184	0.007055	0.005523	0.001705	
0.1	0.10304	0.093776	0.069285	0.046424	0.034269	0.0091204	
					Average of yearly averages:		0.00538142307692308

Inputs generated by pe4.pl - 8-August-2003

Data used for this run:
Output File: FIPTENN
Metfile: w03812.dvf
PRZM scenario: NCappleC.txt
EXAMS environment file: pond298.exv
Chemical Name: Fipronil

Description	Variable Name	Value	Units	Comments
Molecular weight	mwt	437	g/mol	
Henry's Law Const.	henry		atm-m^3/mol	
Vapor Pressure	vapr		torr	
Solubility sol	2.4	mg/L		
Kd Kd		mg/L		
Koc Koc	727	mg/L		
Photolysis half-life	kdp	0.16	days	Half-life
Aerobic Aquatic Metabolism	kbacw	33.7	days	Halflife
Anaerobic Aquatic Metabolism	kbacs	33.7	days	Halflife
Aerobic Soil Metabolism	asm	128	days	Halflife
Hydrolysis:	pH 7		days	Half-life
Method: CAM	1	integer	See PRZM manual	
Incorporation Depth:	DEPI	0.1	cm	
Application Rate:	TAPP	0.014	kg/ha	
Application Efficiency:	APPEFF	1.0	fraction	
Spray DriftDRFT	fraction of application rate applied to pond			
Application Date	Date	1-4	dd/mm or dd/mmm or dd-mm or dd-mmm	
Interval 1 interval	7	days	Set to 0 or delete line for single app.	
Record 17: FILTRA				
IPSCND				
UPTKF				
Record 18: PLVKRT				
PLDKRT				
FEXTRC	0.5			
Flag for Index Res. Run	IR	Pond		
Flag for runoff calc.	RUNOFF	none	none, monthly or total(average of entire run)	

APPENDIX B: TREX Modelling

The following exposure and risk quotients apply to parent fipronil for Chipco 61748A, TopChoice Select, and Chipcco Choice for fire ant broadcast granular formulations. They are all the same label rate.

Chemical: Fipronil ChipcoChoice Fireant Broadcast Granular

LD50 ft-2

INPUTS	Do not overwrite these numbers.	
Application Rate:	0.0125	lbs / acre
% A.I.:	100.00%	
Avian LD50 (20g):	8.14	mg/kg bw
(100g)	10.36	
(1000g)	14.64	
Mammalian LD50 (15g):	213.19	mg/kg bw
(35g)	172.49	
(1000g)	74.61	
Row Spacing:	0	Inches
Bandwidth:	0	Inches
Unincorporation:	100%	

Broadcast applications Granular		
Intermediate Calculations		
mg ai/ft2:	1.30E-01	
LD50 ft-2		
	wgt class	
Avian	20 g	0.80
	100 g	0.13
	1000 g	0.01
Mammal	15 g	0.04
	35 g	0.02
	1000 g	0.00