New York State Department of Environmental Conservation
Division of Materials Management
Bureau of Pest Management
Pesticide Product Registration Section
625 Broadway, Albany, New York 12233-7257
Phone: (518) 402-8768 • **Fax:** (518) 402-9024
Website: www.dec.ny.gov
E-mail: ppr@gw.dec.state.ny.us

Joe Martens
Commissioner

July 16, 2014

Via UPS (Co. No. 264)

Ms. Meshea Brodie
Bayer CropScience
2 T.W. Alexander Drive
Research Triangle Park, NC 27709

Dear Ms. Brodie:

Re: Registration of the New Active Ingredient Penflufen (Active Ingredient Code 100249) as Contained in Emesto Silver, EverGol Energy, and Penflufen TC

The New York State Department of Environmental Conservation (Department) has evaluated your application (received April 8, 2013) and supplemental materials received to date in support of the registration of the above-referenced pesticide products.

Penflufen TC (EPA Reg. No. 264-1118) contains 98.72% of the active ingredient penflufen and is labeled for use in formulating end-use pesticides.

EverGol Energy (EPA Reg. No. 264-1122) contains 3.59% penflufen, 7.18% prothioconazole, and 5.74% metalaxyl as a liquid formulation. The product is labeled for commercial seed treatment of alfalfa, beans (including soybean), peas, barley, triticale, wheat, and rice. Both prothioconazole and metalaxyl have previously been approved for seed treatment uses in New York State. Therefore, this application is not a major change in labeling review of prothioconazole or metalaxyl. The labeled application rates for EverGol Energy are 1 fluid ounce of product per 100 lbs of seed (beans, peas, barley, triticale, and wheat), 1-2 fluid ounces of product per 100 lbs of seed for rice, and 3 fluid ounces of product per 100 lbs of seed for alfalfa. The label allows 3 separate plantings of each crop per year, yielding maximum application rates as shown in the table below:

Crop	Maximum Yearly Application Rate
Beans, peas, and soybeans	0.0384 lb/penflufen/acre/yr
Rice	0.006 lb/penflufen/acre/year
Barley, triticale, and wheat	0.0078 lb/penflufen/acre/year
Alfalfa	0.00225 lb/penflufen/acre/year

Emesto Silver (EPA Reg. No. 264-1123) contains 9.35 % of the active ingredient penflufen and 1.68% of the active ingredient prothioconazole as a liquid formulation. It is labeled for potato seed piece treatment at an application rate of 0.31 fluid ounces of product per 100 pounds of seed pieces. Three separate plantings of treated seed pieces are allowed per year, yielding a maximum yearly application rate of 0.143 lbs of penflufen per acre.

The application was deemed complete for purposes of technical review on February 19, 2014. Pursuant to the review time frame specified in Environmental Conservation Law §33-0704.2, a registration decision date of July 18, 2014 was established. Technical reviews of the proposed uses included on the subject product labels have been performed by the Department and the New York State Department of Health. These reviews encompassed the expected impacts of labeled use of the subject products with respect to human health, ecological effects and environmental fate. The corresponding technical reviews are presented in the Appendix.

The Department concludes that the labeled use of these products should not have an adverse effect on the health of applicators or the general public, the ecological resources, or the water resources of New York State. The Department hereby registers Emesto Silver, EverGol Energy, and Penflufen TC in New York State. Enclosed for your record are copies of the Certificate of Pesticide Registration and stamped "Accepted for Registration" labels.

Please note that a proposal by Bayer CropScience or any other registrant to register a product that contains penflufen, and whose labeled uses are likely to increase the potential for significant impact on humans, nontarget organisms, or the environment, would constitute a major change in labeling. Such an application must be accompanied by a new application fee and meet the requirements listed in Appendix 1.B. of "New York State Pesticide Product Registration Procedures" (April 2009). This information, as well as forms, can be accessed at our website as listed in our letterhead.

Please contact Shaun Peterson, of the Pesticide Product Registration Section, at 518-402-8768, if you have any questions regarding this letter.

Sincerely,

Scott Menrath

Scott Menrath, P.E.
Director
Bureau of Pest Management

APPENDIX

HUMAN HEALTH ASSESSMENT:

The following technical review was produced by staff within the Bureau of Toxic Substance Assessment at the New York State Department of Health (DOH):

Neither penflufen nor the formulated products EverGol Energy and Emesto Silver were very toxic in acute oral, dermal or inhalation exposure studies in laboratory animals. In addition, neither the active ingredient nor the formulated products were very irritating to skin and eyes (tested on rabbits) or skin sensitizers (tested on guinea pigs).

Both acute and subchronic oral neurotoxicity studies were conducted on penflufen in rats. In the acute study, neurotoxic effects including decreased motor and locomotor activity in females were reported at a dose of 100 milligrams per kilogram body weight (mg/kg); the no-observed-effect-level (NOEL) was 50 mg/kg. In the subchronic study, dietary administration of penflufen caused a slight decrease in motor activity in females at 516 mg/kg/day in males and 609 mg/kg/day in females; the respective NOELs were 126 mg/kg/day and 156 mg/kg/day. The U.S. EPA Office of Pesticide Programs (OPP) established an acute oral reference dose (aRfD) for penflufen of 0.5 mg/kg/day based on the NOEL of 50 mg/kg from the acute rat study and an uncertainty factor of 100 to account for interspecies extrapolation and human variability.

Penflufen caused some toxicity in rats and dogs, but not mice, in chronic feeding studies. In a chronic feeding/oncogenicity study in rats, penflufen caused decreased body weight and body weight gain, increased incidence of hepatocellular brown pigment, hepatocellular necrosis, colloid alteration in the thyroid and increased cholesterol in females, as well as increased liver weight, increased incidence of centrilobular to panlobular hepatocellular hypertrophy and centrilobular hepatocellular macrovacuolation in both sexes at 288 mg/kg/day in males and 399 mg/kg/day in females; the respective NOELs were 79 mg/kg/day and 113 mg/kg/day. Penflufen did not cause any toxicity in a chronic feeding/oncogenicity study in mice up to doses of 880 mg/kg/day in males and 1,101 mg/kg/day in females, the highest doses tested. In a one-year dog feeding study, penflufen caused decreased body weight and body weight gain in females, increased prothrombin time in males, and increases in alkaline phosphatase activity, GGT levels, liver weights, hepatocellular hypertrophy and thyroid follicular cell hypertrophy in both sexes at 357 mg/kg/day; the NOEL was 38 mg/kg/day. The U.S. EPA OPP established a chronic oral reference dose (cRfD) for penflufen of 0.38 mg/kg/day based on the NOEL from the chronic dog feeding study and an uncertainty factor of 100. This RfD value has not yet been adopted by the U.S. EPA Integrated Risk Information System (IRIS).

Penflufen caused some toxicity in developmental and reproductive toxicity studies in laboratory animals. In a rat developmental toxicity study, maternal toxicity consisted of increased absolute and relative thyroid weights, thyroid hypertrophy and hyperplasia at a dose of 1,000 mg/kg/day; the NOEL was 200 mg/kg/day. No developmental effects were observed in this study at the highest dose tested (1,000 mg/kg/day). In a rabbit developmental toxicity study, decreased fetal body weight and increased paw hyperflexion was observed at a dose of 60 mg/kg/day; the NOEL was 25 mg/kg/day. Maternal toxicity consisted of decreased body weight at a dose of 60 mg/kg/day; the NOEL was 25 mg/kg/day. In a multi-generation reproduction study in rats, penflufen was associated with decreased pup body weight

and decreased body weight development in offspring at a dose of 50 mg/kg/day; the NOEL was 10 mg/kg/day. Parental toxicity consisted of thyroid follicular hypertrophy and hyperplasia at 50 mg/kg/day; the NOEL was 10 mg/kg/day. No effects on fertility or reproductive performance were observed in this study up to the highest dose tested (300 mg/kg/day).

Penflufen demonstrated some oncogenic potential in rats, but not mice, in combined chronic feeding/oncogenicity studies. Dietary administration of this active ingredient caused a statistically significant increase in histiocytic sarcomas in male rats, but, as noted by the U.S. EPA in their review of this study, this trend occurred without a dose response or pre-neoplastic lesions. Penflufen did not demonstrate any oncogenicity in mice up to dose levels of 880 mg/kg/day in males and 1,101 mg/kg/day in females and was negative in a number of genotoxicity studies. The U.S. EPA classified penflufen as having "suggestive evidence of carcinogenic potential" based on the increased incidence of histiocytic sarcomas in male rats. The U.S. EPA determined that quantification of risk using an RfD would be adequate to account for all chronic toxicity (including carcinogenicity) effects resulting from exposure to penflufen.

The U.S. EPA established tolerances for penflufen residues in or on a number of grains and vegetables (Federal Register 77: 28,276−81; May 14, 2012). The acute population adjusted (aPAD) dose for this active ingredient is 0.5 mg/kg/day and has the same basis as the aRfD. The U.S. EPA estimated the acute dietary exposure to penflufen from food and drinking water would be less than one percent of the aPAD for the general population and all population subgroups. The chronic population adjusted dose (cPAD) for penflufen is 0.38 mg/kg/day and has the same basis as the cRfD. The U.S. EPA estimated that the chronic dietary exposure to penflufen residues from all crops for which there are tolerances and drinking water would also be less than one percent of the cPAD for the general population and all population subgroups. These exposure analyses are based on the assumption that 100 percent of crops are treated and contain tolerance level residues. Actual residues and resulting exposure levels are expected to be less than these assessments estimate.

The U.S. EPA reported the results of an occupational risk assessment for inhalation exposures to penflufen from the labeled use of EverGol Energy and Emesto Silver for commercial seed treatment, in-furrow potato seed piece treatment (via groundboom applicator), and secondary handler (i.e. seed planter) for a number of different crops. Dermal exposures were not assessed because a dermal toxicity endpoint was not identified for penflufen. For determining margins of exposure (MOEs), the U.S. EPA compared estimated short-term (1-30 days) inhalation exposures to a NOEL of 55.7 mg/kg/day from a 90-day feeding study in dogs (decreased body weight and body weight gain in females, an increased incidence of slight diffuse cortical hypertrophy/hyperplasia in the adrenal in males, and clinical chemistry changes, increased liver weights, and increased incidence of hepatocellular hypertrophy in both sexes) and intermediate-term (1-6 months) inhalation exposures to the NOEL of 38 mg/kg/day from the chronic feeding study in dogs. For commercial seed treatment, the MOEs for short-term and intermediate term inhalation exposures ranged from 2.3×10^4−2.5×10^6 and 1.5×10^4−1.7×10^6, respectively, depending on the seed type being treated and the activity (loader/applicator, sewer, bagger, other activities). For in-furrow potato treatment, the estimated MOEs for short-term inhalation exposure were 7.4×10^5 for mixers/loaders and 4.8×10^5 for applicators; the MOEs for intermediate-term exposures were 5.1×10^5 and 3.3×10^5 for mixers/loaders and applicators, respectively. The secondary handler MOEs for short-term and intermediate term inhalation exposures ranged from 1.2×10^5−1.4×10^7 and 8.2×10^4−9.8×10^6, respectively, depending on the seed type being planted. The U.S. EPA

considered MOEs of 100-fold or greater in these scenarios to provide adequate worker protection.

There are no chemical specific federal or New York State drinking water/groundwater standards for penflufen. Based on its chemical structure, this chemical falls under the 50 micrograms per liter (µg/L) New York State drinking water standard for "unspecified organic contaminants" (10 NYCRR Part 5, Public Water Systems). In addition, the U.S. EPA has established non-cancer Human Health Benchmark values (i.e., levels in drinking water at or below which adverse health effects are not anticipated from exposure) for penflufen of 5 mg/L for acute exposures (children only) and 2.66 mg/L for chronic exposures (general population). The Benchmark guideline values have been developed for pesticide active ingredients that may be found in surface or ground water sources of drinking water to enable "stakeholders to better determine whether the detection of a pesticide in drinking water or source waters for drinking water may indicate a potential health risk."

The available information on the active ingredient penflufen and the formulated products EverGol Energy and Emesto Silver indicates that they are not very acutely toxic via oral, dermal and inhalation routes of exposure or eye and skin irritants. This chemical caused some toxicity in chronic and reproductive/developmental toxicity feeding studies and is classified by the U.S. EPA as having "suggestive evidence of carcinogenic potential" based on the increased incidence of histiocytic sarcomas in male rats. Generally, we have concerns about registering a pesticide product for use on food crops when it has oncogenic properties. However, the evidence for carcinogenicity is weak and the testing results indicate that penflufen does not meet the definition of an oncogen in 6 NYCRR Part 700.1. The estimated dietary risks from exposure to penflufen treated crops and drinking water were within the range considered acceptable by the U.S. EPA. In addition, the expected exposure from the labeled use of the formulated products as a seed treatment should not pose significant risks to workers.

Given the above, the New York State Department of Health does not object to the registration of Penflufen TC, EverGol Energy and Emesto Silver in the state on the basis of direct health risks from worker use or dietary exposures.

ECOLOGICAL EFFECTS ASSESSMENT:

The following technical review was produced by staff within the Bureau of Habitat (BOH) within the Department's Division of Fish, Wildlife and Marine Resources:

There are numerous data gaps and uncertainties described in some detail in the U.S. EPA Environmental Fate and Effects Division (EFED) Risk Assessment of penflufen, primarily in the environmental fate area. While penflufen can be highly toxic to aquatic organisms, the seed treatment use pattern utilizes such low application rates it can be reasonably concluded that adverse impacts to non-target resources are unlikely.

Standard BOH conservative, screening level, aquatic and terrestrial exposure modeling was conducted for penflufen.

For aquatic exposures, the yearly allowed application rates from the seed piece and in-furrow potato use pattern as described in EFED documents (0.28 lb of penflufen per acre) was employed in the modeling scenarios. This is an exaggerated rate not likely to occur in NY.

The terrestrial food item residue exposures were modeled using the highest seed concentrations calculated from the label use directions. Alfalfa seed treated according to the label contains roughly 71.7 parts per million of penflufen.

Based on the information provided, penflufen applied according to the label directions does not pose significant risks to non-target resources. Therefore, Bureau of Habitat staff does not object to the registration of the subject products in New York State.

ENVIRONMENTAL FATE ASSESSMENT:

The following technical review was produced by the Department's Environmental Chemistry staff within the Bureau of Pest Management:

Technical Review Findings

This technical review was produced using the submitted EPA Data Evaluation Reports as referenced by MRID number.

Major Transformation Products

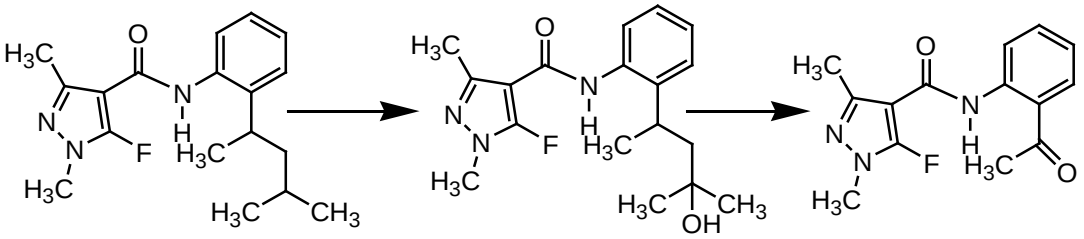
- Penflufen-3-hydroxy-butyl (M01): (RS)-5-fluoro-N-[2-(3-hydroxy-1,3-dimethylbutyl)phenyl]-1,3-dimethyl-1*H*-pyrazole-4-carboxamide
- Penflufen-3-pyrazolyl-AAP (M02): N-(2-acetylphenyl)-5-fluoro-1,3-dimethyl-1*H*-prazole-4-carboxamide
- BYF 14182-fluoro acid (M60): 5-fluoro-1,3-dimethyl-1*H*-pyrazole-4-carboxylic acid

The following table lists the major penflufen degradates, their maximum levels relative to the initially applied parent, the corresponding environmental fate study and MRID number.

The two transformation products produced in the aerobic soil metabolism study, M01 and M02, will be LEACHP modeled.

Environmental Fate Study	Major Degradate Formed	Max Percentage of Initial Applied	MRID No.
Aerobic Soil Metabolism	M01	17.5	48023553
	M02	13.4	
Aqueous Photolysis	M60	9.9	48023549

Proposed Aerobic Soil Metabolism Penflufen Degradation Pathway



Penflufen **M01** **M02**

Water Solubility – MRID 48023535[1]

The following table lists the water solubilities of penflufen and major degradates[2] M01 and M02:

Compound	Temperature (°C)	Water Solubility (mg/L)
Penflufen	20	10.9
M01	20	95
M02	20	3.6

It is unclear what the MRID 48023535 study's acceptability was determined to be.

Aqueous Hydrolysis – MRID 48023547

In an acceptable study and at 50°C, penflufen was found to be stable to hydrolysis at pH 4, 7, and 9. No major transformation products were detected. Because penflufen was found to be stable to hydrolysis at 50°C, no additional study at lower temperature was performed.

Aqueous Photolysis – MRID 48023548

In a supplemental study at 25.0 °C, the environmental photo-transformation half-life of penflufen was found to be 83 days (Phoenix, AZ) and 131 days (Athens, Greece). No major transformation products were detected.

Soil Surface Photolysis – No MRID Number

Study not required since this is a seed treatment.

[1] In the *Environmental Fate and Ecological Risk Assessment for the Registration of Penflufan, December 23, 2011*, Tables 3.2 and 3.5 list the MRIDs for the water solubility study as 48023535 and 48023537, respectively, so it is not clear which MRID is correct. Neither study was provided in the package.

[2] The solubilities of the degradates were not found within the submitted registration materials but were found on the Pesticides Properties Database from the Agriculture and Research Unit based at the University of Hertfordshire, UK.

Aerobic Soil Metabolism – Penflufen – MRIDs 48023552 and 48023553

The following table lists the half-lives of penflufen in four soils from Germany and two from the U.S.; the major transformation products formed; and the maximum amount of transformation product formed relative to the original amount of parent applied to the soil.

The half-lives for penflufen ranged from 117 days to 432 days. The major transformation product M01 was found at a maximum amount of 17.5% of the penflufen applied while the degradate M02 had a maximum at 13.4%, both using the silty loam soil from Nebraska.

These studies were performed at 20°C and were all qualified as supplemental.

Soil Type	pH	Percent Organic Carbon	DT50 (Days)	Major Transformation Product(s)	Max Percent of Applied
MRID 48023552 – Aerobic Soil Transformation of Penflufen					
Silt loam, Germany	7.2	1.80	117	M01	15.2
Sandy loam, Germany	7.1	1.27	165	M01	10.1
Loam, Germany	6.2	1.54	243	None	7.2
Loam, Germany	7.4	1.12	129	M01	13.8
MRID 48023553 – Aerobic Soil Transformation of Penflufen					
Silty loam, Springfield, NE	7.0	1.8	249	M01 M02	17.5 13.4
Sandy loam, Porterville, CA	8.0	0.6	**432**	None	-

Aerobic Soil Metabolism of Degradate M01 – No MRID or DER Provided

It was communicated by the registrant that USEPA did not request aerobic soil metabolism studies for the major degradate M01 as they did for degradate M02 so no DERs were available for review. However, an e-mail from the registrant indicated that there were studies conducted relating to "ecological and drinking water exposure assessments" that provided kinetic analysis results. The results of the kinetic analysis indicated half-lives of 40, 40, 48, 51, 138 and 385 days. In order to be protective of groundwater quality, the 385 day half-life (bolded value in the following table) will be used in the LEACHP modeling of degradate M01.

Soil Type	pH	Percent Organic Carbon	DT50 (Days)	Major Transformation Product(s)	Max Percent of Applied
Soil Type Not Provided (From PPDB[3]	?	?	60	?	?
Soil Type Not Provided (From Bayer Crop Science)	?	?	**385**	?	?

Note: It has been proposed that degradate M01 is a precursor to the formation of degradate M02. This is shown in the proposed degradation pathway shown earlier in this review.

Aerobic Soil Metabolism of Degradate M02 - 48023554

The following table lists the half-lives of degradate M02 in four soils from Germany and two from the U.S., the major transformation products formed, and the maximum amount of transformation product formed relative to the original amount of parent applied to the soil.

Soil Type	pH	Percent Organic Carbon	DT50 (Days)	Major Transformation Product(s)	Max Percent of Applied
Silt loam, Germany	6.9	2.4	115.5	None	-
Sandy loam, Germany	6.7	1.7	**257**	None	-
Loam, Germany	5.7	2.3	231	None	-
Loam, Germany	7.4	4.8	128.4	None	-

It should be noted here that the proposed degradation pathway shown on Page 2 has parent penflufen being transformed by aerobic bacteria into degradate M01 which is then transformed into degradate M02 as a final degradation product.

Anaerobic Soil Metabolism – MRID 48023555

In an acceptable study at 20°C in the dark using a silt loam soil from Germany with the pH at 6.7 and the OC at 3.4%, the half-life of penflufen in the total system was 866 days, 990 days in the soil, and 173 days in the water layer. Dissipation was by adsorption of residues to the soil. The only transformation product was M01 and a level less than 10% (minor degradate).

Adsorption/Desorption Penflufen – MRID 48023546

In a supplemental study, using five soils, three from Germany and two from the U.S., adsorption K_{OC} values for parent penflufen were determined and are listed in the following table.

The K_{OC} value from the Pikeville, NC soil study (bolded 475) will be used for modeling since that soil's pH and percent organic carbon are more similar to that of Long Island soils.

[3] http://sitem.herts.ac.uk/aeru/ppdb/en/Reports/2390.htm

Soil Type	pH	% OC	Adsorption K_{OC}
Sandy loam, Germany	6.4	1.7	404
Silt loam, Germany	6.5	2.3	283
Loam, Germany	5.7	1.2	257
Loamy sand, Pikeville, NC	**5.6**	**1.3**	**475**
Clay loam, Stilwell, KS	6.1	2.3	407

Adsorption/Desorption Degradate M01 – MRID 48023544

In a supplemental study, using five soils, three from Germany and two from the U.S., adsorption K_{OC} values for degradate penflufen-3-OH-butyl (M01) were determined and are listed in the following table.

The K_{OC} value from the Pikeville, NC soil study (bolded 63) will be used for modeling since that soil's pH and percent organic carbon are more similar to that of Long Island soils.

Soil Type	pH	% OC	Adsorption K_{OC}
Sandy loam, Germany	6.7	2.4	30
Silt loam, Germany	6.7	2.9	40
Sandy loam, Germany	5.4	1.9	37
Sandy loam, Pikeville, NC	**5.6**	**0.9**	**63**
Silty clay, Stilwell, KS	4.9	2.1	69

Adsorption/Desorption Degradate M02 – MRID 48023545

In a supplemental study, using five soils, three from Germany and two from the U.S., adsorption K_{OC} values for degradate penflufen-pyrazole-AAP (M02) were determined and are listed in the following table.

The K_{OC} value from the Pikeville, NC soil study (bolded 3553) will be used for modeling since that soil's pH and percent organic carbon are more similar to that of Long Island soils.

Soil Type	pH	% OC	Adsorption K_{OC}
Sandy loam, Germany	6.0	1.7	1954
Silt loam, Germany	6.9	2.8	1868
Silt loam, Germany	7.5	1.8	1906
Sandy loam, Pikeville, NC	**5.6**	**0.9**	**3553**
Silty clay, Stilwell, KS	4.9	2.1	9313

Terrestrial Field Dissipation – MRIDs 48023558, 48023559, 48023560, 48023561, 48023562, 48023563, 48023564

In 11 supplemental studies using soils from the USA, Canada, the UK, Germany and France, half-lives of the parent penflufen ranged from 14 to 308 days. One study was found to be unacceptable (MRID 48023558) so those findings were omitted from the table.

Soil Type	pH Range thru Detection Depth	% OC Range thru Detection Depth	Reviewer Calculated DT50	Maximum Detection Depth[4] (cm)	Route of Dissipation	Transformation Products
MRID 48023558						
Unacceptable study	na	na	na	na	na	na
MRID 48023559						
Loamy sand, GA	6.0	0.64	11	15	Transformation	M01, M02
MRID 48023560						
Loam, ID	7.0 - 8.4	0.22 - 0.35	308	45 - 60	Transformation	M01, M02
MRID 48023561						
Loam, Ontario	7.2	2.6	14	15	Transformation	M01, M02
MRID 48023562						
Sandy loam, Saskatchewan	?[5]	?	*ca* 200	15	Transformation	M01, M02
MRID 48023563						
Sandy loam, Prince Edward Island	6.1 - 5.4	2.1 - 1.9	*ca* 15	15 - 30	Transformation	M01, M02

[4] Maximum depth where the compound was detected above the limit of quantification.
[5] Pages 2, 3, and 4 were missing from this DER.

Soil Type	pH Range thru Detection Depth	% OC Range thru Detection Depth	Reviewer Calculated DT50	Maximum Detection Depth[4] (cm)	Route of Dissipation	Transformation Products
MRID 48023564						
Clay loam, Vatteville, France	7.6	1.0	239	10 - 20	Transformation	M01
Clay, Great Chishill, UK	7.4	2.2	224	10 - 20	Transformation	M01
Clay loam, Igeloesa, Sweden	7.1	1.1	257	10 - 20	Transformation	M01
Loam, Burscheid, Germany	6.3	1.2	239	10 - 20	Transformation	M01
Loam, Albaro, Italy	7.8	0.9	187	0 - 10	Transformation	M01
Loam, Vilobi d'Onyar, Spain	5.9	0.6	103	0 - 10	Transformation	M01

LEACHP Modeling of Penflufen

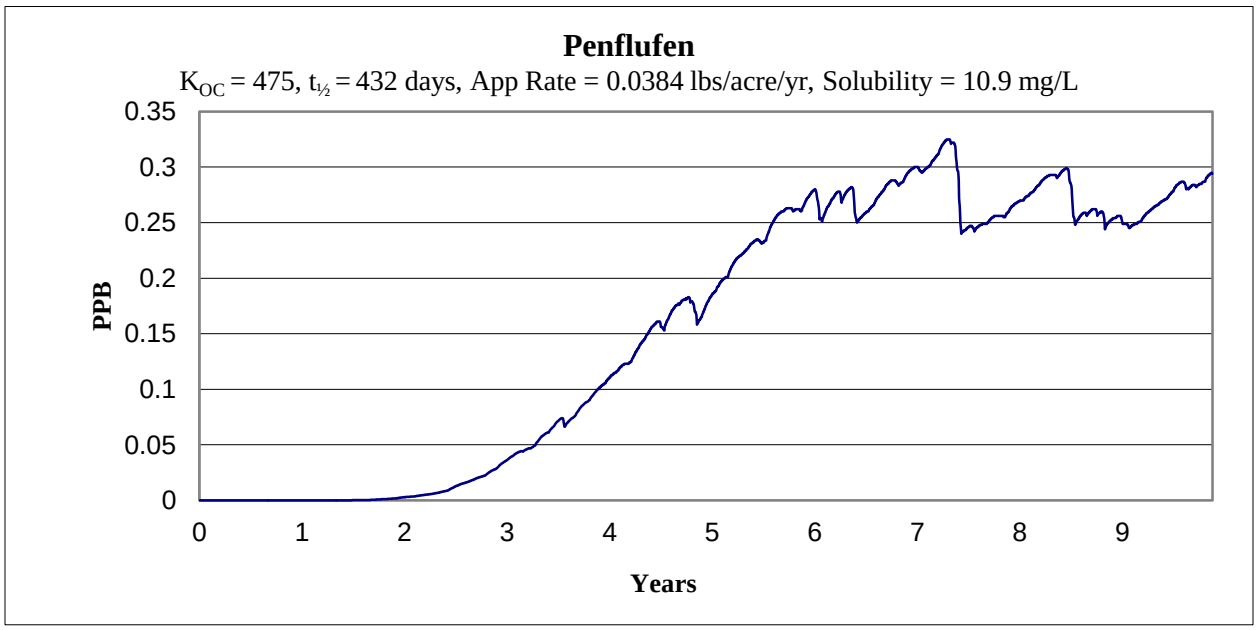
Modeling was performed using the parameters that are listed in the following table. The modeled compounds include the parent penflufen and the two aerobic soil transformation products M01 and M02:

Compound	Solubility (mg/L)	Maximum Aerobic Biodegradation Half-life (Days)	K_{OC}	Maximum Application Rate (lbs/acre/yr)
Penflufen	10.9	432	475	0.0384
M01	95	385	63	0.0071
M02	3.6	257	3553	0.0045

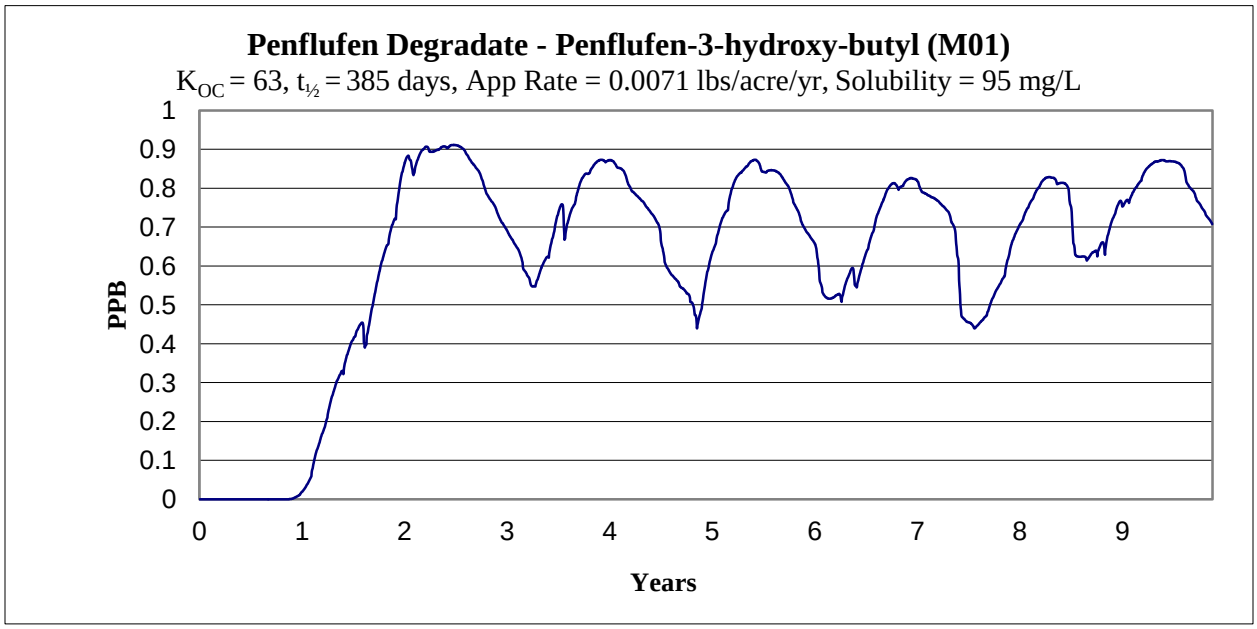
Environmental Fate Conclusion

Due to the leaching levels that are shown in the LEACHP profiles below for penflufen and degradates M01 and M02, Environmental Fate staff have no objection to registration of this active ingredient in New York State.

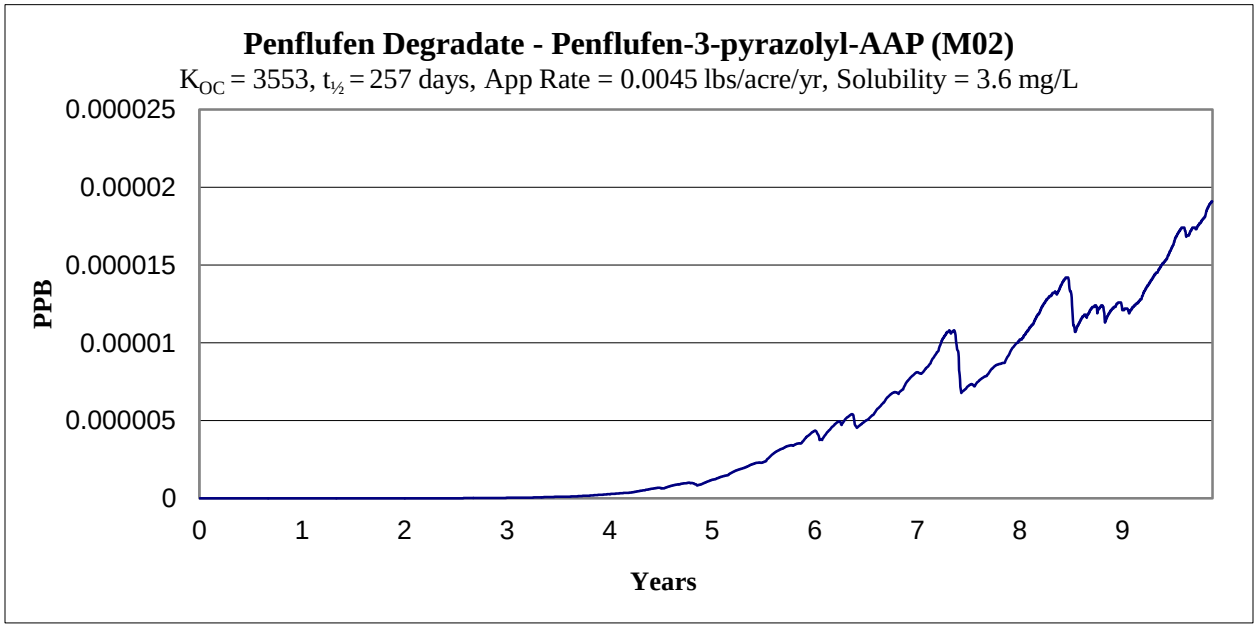
LEACHP Models
Penflufen and Degradates M01 and M02



Maximum at 0.325 ppb



Maximum at 0.912 ppb



Maximum at 1.91E-5 ppb