



**US Environmental Protection Agency
Office of Pesticide Programs**

**Reregistration Eligibility
Decision (RED) for Ammonium
Thiosulfate**

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Reregistration Eligibility Decision for Ammonium Thiosulfate (Inorganic Thiosulfates)

Reregistration Eligibility Decision (RED) for
Ammonium Thiosulfate

List D

Case No. 4057

Approved by: 

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Date: 12/20/07

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Glossary of Terms and Abbreviations

ae	Acid Equivalent
ai	Active Ingredient
CFR	Code of Federal Regulations
CSF	Confidential Statement of Formula
DCI	Data Call-In
ESTAC	Endocrine Disruptor Screening and Testing Advisory Committee
EDWC	Estimated Drinking Water Concentration
EEC	Estimated Environmental Concentration
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EUP	End-Use Product
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFDCA	Federal Food, Drug, and Cosmetic Act
FQPA	Food Quality Protection Act
GENEEC	Tier I Surface Water Computer Model (Estimated Aquatic Environmental Concentrations)
GRAS	Generally Recognized As Safe
LC ₅₀	Median Lethal Concentration. A statistically derived concentration of a substance that can be expected to cause death in 50% of test animals. It is usually expressed as the weight of substance per weight or volume of water, air or feed, e.g., mg/l, mg/kg or ppm.
LD ₅₀	Median Lethal Dose. A statistically derived single dose that can be expected to cause death in 50% of the test animals when administered by the route indicated (oral, dermal, inhalation). It is expressed as a weight of substance per unit weight of animal, e.g., mg/kg.
LOC	Level of Concern
LOAEL	Lowest Observed Adverse Effect Level
mg/kg/day	Milligram Per Kilogram Per Day
mg/L	Milligrams Per Liter
MRID submitted.	Master Record Identification (number). EPA's system of recording and tracking studies
MUP	Manufacturing-Use Product
N/A	Not Applicable
NOAEL	No Observed Adverse Effect Level
OPP	EPA Office of Pesticide Programs
ppb	Parts per Billion
PPE	Personal Protective Equipment
ppm	Parts per Million
RED	Reregistration Eligibility Decision
REI	Restricted Entry Interval
RQ	Risk Quotient
TGAI	Technical Grade Active Ingredient
UV	Ultraviolet
WPS	Worker Protection Standard

I. Introduction

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was amended in 1988 to accelerate the reregistration of products with active ingredients registered prior to November 1, 1984. The amended Act calls for the development and submission of data to support the reregistration of an active ingredient, as well as a review of all submitted data by the U.S. Environmental Protection Agency (referred to as EPA or “the Agency”). Reregistration involves a thorough review of the scientific database underlying a pesticide’s registration. The purpose of the Agency’s review is to reassess the potential risks arising from the currently registered uses of the pesticide, to determine the need for additional data on health and environmental effects, and to determine whether or not the pesticide meets the “no unreasonable adverse effects” criterion of FIFRA.

This document summarizes EPA’s human health and ecological risk assessments and reregistration eligibility decision (RED) for ammonium thiosulfate. The document consists of six sections. Section I contains the regulatory framework for reregistration; Section II provides an overview of the chemical and a profile of its use and usage; Section III gives an overview of the human health and environmental effects risk assessments; Section IV presents the Agency’s decision on reregistration eligibility and risk management; and Section V summarizes the label changes necessary to implement the risk mitigation measures outlined in Section IV. Finally, the Appendices list related information, supporting documents, and studies evaluated for the reregistration decision. The risk assessments for ammonium thiosulfate and all other supporting documents are available in the Office of Pesticide Programs (OPP) public docket at <http://www.regulations.gov> under docket number EPA-HQ-OPP-2007-1160.

II. Chemical Overview

A. Regulatory History

Ammonium thiosulfate was originally registered as a pesticide active ingredient in the United States in May 1967. There is currently only one product with ammonium thiosulfate as an active ingredient registered with the EPA. This product is a 55% active ingredient herbicide used to kill oxalis and spurge plants on dichondra and bladegrass lawns. No data call-ins (DCIs) have been issued for the active ingredient ammonium thiosulfate.

Ammonium thiosulfate is also registered as an inert ingredient in pesticide products. Ammonium thiosulfate was assessed by the Registration Division of the Office of Pesticide Programs in 2004 to evaluate its safety as an inert ingredient in pesticide products. Based on its review and evaluation of the available information, EPA concluded that there was a reasonable certainty that no harm will result to the general population and to infants and children from aggregate exposure to residues of ammonium thiosulfate when used as an inert in pesticide products. The tolerance exemption in 40 CFR 180.910 [formerly 180.1001(c)] was reassessed on September 7, 2004 and the category was confirmed as List 4B (inert ingredients with sufficient data to substantiate safe use in pesticide products).

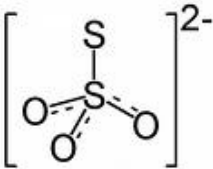
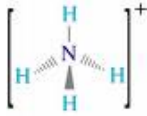
B. Chemical Identification

There are three active ingredients in Case 4057. The active ingredients are shown below. Ammonium thiosulfate is the only active ingredient in the group for which there is a registered product. Therefore it is the only active ingredient addressed in this RED.

Calcium Thiosulfate	080101	10124-41-1	No active products; Last product cancelled on September 11, 2007
Potassium Thiosulfate	080102	10233-00-8	No active products; Last product cancelled on October 10, 1989
Ammonium Thiosulfate	080103	7783-18-8	One active product; Reg No 9499-1

Ammonium thiosulfate is registered with the EPA as an herbicide. It is an inorganic compound used specifically to kill oxalis and spurge plants on dichondra and bladegrass lawns. Chemical information and the structure for ammonium thiosulfate is presented in Table 2.

PC Code	080103
Chemical Name	Ammonium thiosulfate

Table 2. Physical-Chemical Properties of Ammonium Thiosulfate	
	Thiosulfate Ammonium Counter Cation
Structure	 
CAS Number	Solution: 7783-18-8 Anhydrous: 7664-41-7
Empirical Formula	(NH ₄) ₂ S ₂ O ₃
Molecular Weight	148.21 (Anhydrous)
Vapor pressure (25 °C)	0 mm Hg
Water Solubility (100 °C)	103.3 g/100 ml water Complete dissociation

C. Use Profile

Type of Pesticide:	Herbicide
Target Pests:	Oxalis and spurge plants on dichondra and bladegrass lawns.
Mode of Action:	Causes burn by overfeeding nitrogen to plants.
Use Sites:	Registered for residential lawn care use only. Sold only in the state of California. For use mainly on dichondra lawns. Dichondra (<i>Dichondra repens</i> ; kidney weed dichondra) is a low-growing, creeping perennial that spreads by underground runners. The leaves are kidney-shaped and dark green in color. The overall appearance is that of a flat clover. It has a neat velvety appearance throughout the year and needs no mowing.
Formulation Type:	Liquid soluble concentrate.
Application Methods:	Pressure tank sprayer. Product should be mixed with water in a ratio of 4 oz. product per gallon of water per 100 square feet of area.
Application Rates:	1.705 lbs ai/1000 square feet or 74.3 lbs ai/acre. Can be repeated every 10-14 days as necessary.
Application Timing:	Ammonium thiosulfate is applied when weeds emerge. This occurs around April in California. The label states, "Apply to dichondra lawns when the temperature is in the mid-seventies. Apply to bladegrass lawns up to 95 degrees."
Registrants:	The registrant for the sole ammonium thiosulfate product is National Chelating Corporation.

D. Estimated Usage of Pesticide

Less than 6500 pounds of the herbicide ammonium thiosulfate product are used per year. The fertilizer use of ammonium thiosulfate vastly exceeds the pesticide use of ammonium thiosulfate. Between 500 and 700 million pounds of ammonium thiosulfate are used annually as fertilizer in the U.S. Fertilizer use is not within the purview of regulation by the Office of Pesticide Programs.

Use Considered for Reregistration

Table 3 lists the labeled uses considered for reregistration.

Oxalis/Spurge X	9499-1	55	Oxalis and spurge	Mostly dichondra lawns, some bladegrass lawns. Product currently only sold in California.

III. Summary of Ammonium Thiosulfate Risk Assessments

The purpose of this summary is to assist the reader by identifying the key features and findings of these risk assessments, and to help the reader better understand the conclusions reached in the assessments. The human health and ecological risk assessments and supporting documents referenced in Appendix C were used to formulate the regulatory decision for the pesticidal use of ammonium thiosulfate.

While the risk assessments and related addenda are not included in this document, they are available in the OPP Public Docket, docket number EPA-HQ-OPP-2007-1160, and may be accessed through <http://www.regulations.gov/>. Hard copies of these documents may also be found in the OPP public docket under this same docket number.

Ammonium Thiosulfate HED Human Health Risk Assessment for the RED. Dated September 28, 2007.

Ammonium Thiosulfate Ecological Risk Assessment. Dated September 13, 2007.

A. Human Health Risk Assessment

The human health risk assessment addressed potential exposure and risks from all registered uses. Ammonium thiosulfate is not registered for use on any food commodities and exposure is not expected from drinking water sources. Additionally, ammonium thiosulfate is sold in quart-sized packaging that discourages use by professional lawn care operators; therefore the Agency only considered potential exposures in residential settings.

Because of the relatively low toxicity, limited use pattern, and the nature of this chemical, there is no reason to expect that the currently labeled use will pose any significant hazard to humans, and a quantitative risk assessment is not warranted. For the qualitative human health risk assessment, refer to *Ammonium Thiosulfate HED Human Health Risk Assessment for the RED, dated September 28, 2007*, which is available in the public docket.

1. Toxicity of Ammonium Thiosulfate

The human health risk assessment utilized animal toxicity studies to estimate risk to humans exposed to ammonium thiosulfate. The toxicological data are sufficient for risk assessment.

a. Toxicity Profile

Ammonium thiosulfate has low to moderate toxicity via oral (Category III) and dermal (Category III) routes of exposure. It is moderately toxic by the inhalation route of exposure (Category II). The only toxicity data submitted for this non-food use pesticide include acute oral, dermal, and inhalation studies in rats or rabbits. The acute oral LD50 (rats; both sexes combined) was 3824 mg/kg/bw. The acute dermal LD50 (rabbits) was greater than 2000 mg/kg/bw (highest dose tested). For the acute inhalation study, rats were exposed to ammonium thiosulfate aerosol (1.79 mg/L) for four hours. Signs noted at this high concentration included

polypnea and dyspnea, languid behavior, hunched appearance, prostration and tremors, rhinorrhea, chromodacryorrhea, and salivation. There were no effects on body weights and all animals survived the treatment. Table 4 describes the acute toxicity profile of ammonium thiosulfate.

870.1100	Acute oral – rat	41647405	LD ₅₀ = 3824 mg/kg/bw	III
870.1200	Acute dermal - rabbit	41647406	LD ₅₀ = >2000 mg/kg/bw	III
870.1300	Acute inhalation - rat	41647407	1.79 mg/L	II

Reproductive, developmental, subchronic dermal, and chronic toxicity studies have been waived for ammonium thiosulfate based on the non-food use pattern, low to moderate acute toxicity, similarity to Generally Recognized as Safe (GRAS) chemicals, and the instantaneous breakdown in the acidic environment of the stomach, since these toxicity studies are administered via the oral route. In an acidic environment such as the stomach, ammonium thiosulfate will rapidly give rise to the ammonium and thiosulfate ions, which ultimately break down to elemental sulfur and sulfite. These sulfur forms will be quickly oxidized under acidic conditions to sulfate, which will be incorporated into the normal sulfate pool that exists within the metabolic system of the various animal test systems.

Ammonium thiosulfate was negative in various mutagenicity assays, including rat hepatocyte unscheduled DNA synthesis, chromosomal aberrations in Chinese hamster ovary cells, and gene mutation in Salmonella/mammalian microsomes.

The Food and Drug Administration (FDA) conducted studies in 1975 and 1985 on the GRAS status of sulfite. As a result of these studies, the FDA substantiated the GRAS status, but noted that some individuals are allergic to sulfite. In humans, ammonium ion is absorbed from the gastrointestinal tract and undergoes conversion to urea and glutamine.

b. Exposure/Risk Pathway

Dietary Exposure

Because the use of ammonium thiosulfate on lawns is a non-food use, there is no expectation of dietary exposures through food consumption. Residues of ammonium thiosulfate (including sulfite ions) will not be consumed by people. In addition, because of the complete dissociation into ammonium and thiosulfate ions, exposures to ammonium thiosulfate by drinking water are not expected.

Residential (Non-Occupational) Exposure and Risk

Adult handlers mixing the product prior to application may experience dermal exposure to ammonium thiosulfate. However, there are no systemic or other toxic effects expected from

dermal exposures to ammonium thiosulfate; therefore a dermal assessment is not necessary and there is no risk of concern for adult mixers.

Exposures of adult handlers while initially mixing the product may be to ammonium thiosulfate, *per se*, as the pesticide product is in an aqueous saturated solution. However, once mixed with additional water as per the label instructions, the compound quickly dissociates. All other potential exposures for adults and children would be to the resulting ammonium ion, or to the thiosulfate or sulfate ions, and not to the active ingredient ammonium thiosulfate. Exposure to these naturally occurring ions does not warrant a quantitative risk assessment. There is no risk of concern to adults applying the diluted ammonium thiosulfate product, or to adults or children exposed post application on treated lawns.

Inhalation exposures during mixing and applying would most likely be to ammonia (NH₃), a colorless, pungent gas, rather than to ammonium thiosulfate. Most of the ammonia in aqueous solution will remain in equilibrium with the ammonium cation (NH₄⁺). Exposure to high concentrations of ammonia can result in the burning of the nose, throat, and respiratory tract. At low concentrations, it is a respiratory irritant. Any exposure to ammonia would be brief during mixing.

Aggregate Exposure and Risk

With the exception of potential dermal exposure to adult mixers, residential exposures to ammonium thiosulfate are not expected. Also, dietary exposures from food and drinking water are not expected. Therefore, no aggregate risk assessment is needed.

Occupational Exposure and Risk

Occupational exposures to ammonium thiosulfate are not expected because the Oxalis/Spurge X product is only intended for use by residential handlers. Ammonium thiosulfate is packaged only in a quart-sized container. A quart-sized container, such as the ammonium thiosulfate packaging, would mainly be used by residential handlers with small-scale lawn care needs; lawn care service providers would need to use larger sized products due to the larger scale of occupational lawn care jobs, and therefore would be unlikely to use ammonium thiosulfate. Therefore, no occupational exposure risk assessment is needed for ammonium thiosulfate.

c. Endocrine Disruption

EPA is required under the Federal Food Drug and Cosmetic Act (FFDCA), as amended by FQPA, to develop a screening program to determine whether certain substances (including all pesticide active and other ingredients) “*may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or other such endocrine effects as the Administrator may designate.*” Following the recommendations of its Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), EPA determined that there were scientific bases for including, as part of the program, androgen and thyroid hormone systems, in addition to the estrogen hormone system. EPA also adopted EDSTAC’s recommendation that the Program include evaluations of potential effects in wildlife. When the appropriate screening and/or

testing protocols being considered under the Agency's Endocrine Disrupter Screening Program (EDSP) have been developed and vetted, ammonium thiosulfate may be subjected to additional screening and/or testing to better characterize effects related to endocrine disruption.

B. Environmental Risk Assessment

No acceptable environmental fate or ecotoxicity guideline studies are available for ammonium thiosulfate. However, given the well-understood nature of the chemical and its predicted behavior in the environment, this was not an impediment to risk assessment. The aquatic assessment relies on the U.S. EPA ambient water quality criteria for ammonia (1999 Update). The ammonium thiosulfate ecological risk assessment is qualitative in nature, but it does consider available mammalian toxicity data. The full assessment, *Ammonium Thiosulfate Ecological Risk Assessment, dated September 13, 2007*, is available on the internet and in the public docket at www.regulations.gov (EPA-HQ-OPP-2007-1160).

1. Environmental Fate and Transport

No environmental fate guideline studies are available for ammonium thiosulfate; thus, the environmental fate and exposure assessment will be based on open literature data. EPISuite Version 3.2, a tool commonly used in the ecological risk assessment process when environmental fate data are unavailable, cannot be used to estimate the environmental fate and transport of ammonium thiosulfate because it is not an appropriate model for inorganic chemicals such as ammonium thiosulfate.

Ammonium thiosulfate is an inorganic compound that dissociates completely in water. The dissociation products are the thiosulfate anion and its ammonium counter cation. This is the first step in the behavior of thiosulfate in the environment. Both thiosulfate and ammonium are considered in the ecological risk assessment.

Thiosulfate is a metastable, moderately reducing oxyanion of sulfur. Chemical reactions (redox reactions) of thiosulfate generate chemical species of sulfur that differ in their oxidation state. The ammonium counter cation in ammonium thiosulfate is a source of "ammoniacal nitrogen." Its major chemical reaction in the environment is oxidation to nitrate nitrogen, which is known as nitrification. Ammonium also exists in equilibrium with ammonia gas. The thiosulfate anion is only stable in neutral or alkaline media. It is unstable in acid media. In aqueous media, thiosulfate irreversibly disproportionates to sulfide and sulfate.

The chemistry of sulfur in soils (and in water) is complex because of its many oxidation states. The terminal, thermodynamically-favored reaction product of thiosulfate is sulfate, except in highly reduced soils. As an anion, sulfate is expected to be mobile in soils. Sulfate is ubiquitous and is present in most natural waters, where it is considered a permanent solute. Sources of sulfate in natural water are dissolution of naturally occurring sulfate salts, runoff of oxidized sulfide ores, acid rain deposition, industrial waste and fertilizers. No aquatic exposure modeling was performed for sulfate, and risk was discussed qualitatively.

For the ammonium counter cation, its major chemical reaction in the environment is oxidation to nitrate. Ammonium is expected to be in equilibrium with ammonia gas in the soil air voids. The volatilization of ammonia is dependent on temperature and pH of the media and increase with increasing temperature and pH. As a cation, ammonium can adsorb to soil colloid or organic matter through electrostatic cation exchange. For ammonia, a screening-level aquatic exposure assessment using the GENEEC model (Version 2.0) was conducted to estimate surface water concentrations of ammonium from use of ammonium thiosulfate as a pesticide.

2. Ecological Exposure and Risk

There are no acceptable registrant-submitted ecotoxicity data available for fish, aquatic invertebrates, aquatic plants, birds, terrestrial invertebrates, or terrestrial plants for consideration in the ammonium thiosulfate ecological risk assessment. The aquatic assessment relies on the U.S. EPA ambient water quality criteria for ammonia (1999 Update). The terrestrial assessment is qualitative in nature, but it does consider available mammalian toxicity data.

Terrestrial Organism Exposure and Risk

Exposure

Based on basic physical-chemical principles, ammonium thiosulfate will dissociate to form ammonium (NH_4^+) and thiosulfate ($\text{S}_2\text{O}_3^{2-}$) ions when used as an herbicide application in a residential setting to control spurge and oxalis in dichondra and bladegrass lawns. Dissociation in water is the first step involved in the environmental fate of ammonium thiosulfate.

Terrestrial exposures of ammonium and thiosulfate were not quantitatively estimated in the risk assessment. As described in Section III.B.1. of this RED, the environmental fate of thiosulfate is dependent on soil redox potential. In suboxic and oxic environments (where oxygen, nitrogen and iron act as electron acceptors), thiosulfate will be oxidized to form sulfate. The environmental fate of ammonium is predominantly dependent on nitrification and sorption on soil colloids and organic matter. Ammonium may also form ammonia ($\text{NH}_3(\text{g})$) in very alkaline and sodic soil environments (pH 9-10).

Given the environmental fate of ammonium thiosulfate in terrestrial systems (see Section III.B.1 of this RED), it is not appropriate to model terrestrial dietary residues using the T-REX model. The potential terrestrial risks associated with using ammonium thiosulfate as a pesticide will be discussed qualitatively.

Risk

Sulfur and nitrogen are essential nutrients for plants and animals. Available mammalian data indicate that ammonium thiosulfate is practically non-toxic on an acute oral basis. There are no toxicity data available for birds, terrestrial invertebrates, or terrestrial plants. Since ammonium thiosulfate is being used as an herbicide, there is a possibility that non-target plants may be at risk. However, given that it is only used in residential/homeowner settings in California on dichondra and bladegrass lawns, the potential for adverse effects to non-target plants (including Federally-listed species) is highly unlikely.

Given the nature of the chemical and its expected behavior in the environment, and because sulfur and nitrogen are essential nutrients for plants and animals, risk to terrestrial organisms is not expected as a result of ammonium thiosulfate use as an herbicide on dichondra and bladegrass lawns.

Aquatic Organism Exposure and Risk

Exposure

Ambient surface water concentrations of sulfate range from 0.1 to 12,000 mg/L (USGS NWIS, March 21, 2005). The maximum sulfate concentration was detected at sites in Montana, Wyoming, and Arizona. These sites were generally associated with mining activities. It is very unlikely the concentration of sulfate from ammonium thiosulfate would approach the maximum concentration of sulfate in surface water as a result of its limited use as an herbicide to control spurge and oxalis in dichondra and bladegrass lawns. No aquatic exposure modeling will be performed for sulfate, and risk is discussed qualitatively.

For ammonia, a screening-level aquatic exposure assessment using the GENEEC model (Version 2.0) was conducted to estimate surface water concentrations of ammonium from use of ammonium thiosulfate as a pesticide. Ammonium concentrations in surface water were used to estimate ammonia concentrations using chemical equilibria. Additionally, the Henry’s constant was used to estimate the partitioning of ammonia between water and air. It is important to note that the GENEEC model is not designed to address environmental behavior of inorganic compounds. Therefore, the Tier I modeling required conservative assumptions for input parameters (see Table 4 below). This exposure assessment is conservative because it assumes 100% of ammonium from ammonium thiosulfate is available for runoff. Competing environmental fate processes for ammonium fixation (sorption on sediment and soil) and transformation (nitrification, denitrification, etc.) are not considered in the assessment.

Hydrolysis half-life (days)	0	Assumed	pH-dependence of redox reactions are not taken into account
Photolysis in Water half-life (days)	0	Assumed	Photooxidation reactions not taken into account
Aerobic Soil Metabolism half-life (days)	0	Assumed	Microbial nitrification not considered
Anaerobic Aquatic Metabolism half-life (days)	0	Assumed	Microbial nitrification not considered
Solubility in Water, mg/L	1030	Open literature	This solubility is based on the solubility of ammonium thiosulfate, which is mostly reported as “very soluble”; “totally soluble”. The value used to run GENEEC is the reported solubility of ammonium thiosulfate at 100°C.

Table 5. Environmental fate, physical/chemical, and use information input parameters selected GENEEC model to estimate ammonia concentrations in surface water resulting from ammonium thiosulfate pesticidal application to dichondra and bladegrass lawns.

Input parameter			
			The solubility would be lower at 25°C.
K _{oc}	0	Assumed	Ammonium is known to sorb onto clay surfaces. For screening level purposes, a K _{oc} of zero was assumed
Method of Application	Ground, Broadcast	Assumed from the available label	Spot applications are probably more typical for this product
Frequency of Application	4 times per year	Assumed	The label does not specify an upper limit of number of applications per year
Interval between applications (days)	10	Shorter interval specified in the label	N/A
Application Rate, lb Ammonium/A	18.09	Estimated	The application rate for ammonium was based on an estimate of the application rate of ammonium thiosulfate in terms of lbs per acre.

The Tier 1 aquatic exposure modeling scenario assumes a 10-hectare field is 100% treated with ammonium thiosulfate at 74.31 lbs/A (the labeled application rate for ammonium thiosulfate). Because the registered pesticidal use of ammonium thiosulfate is in residential/homeowner settings, it is highly conservative to assume 100% of the area is treated. According to the U.S. Census data, a typical house (residence) area is 1000 sq-foot (0.023 acre) located within a 0.25 acre plot. It is then assumed that the area in the plot not occupied by the house is lawn and that all of the lawn is treated with ammonium thiosulfate at the estimated application rate. With these assumptions, the percent treated area is 91%. This percent treated area correction is used as a refinement in the exposure assessment.

The GENEEC estimated environmental concentrations (EECs) for the ammonium cation are summarized in Table 6. The concentrations appear to remain stable as a result of the environmental fate assumptions used for model input parameters.

PTA Corrected	3.90	3.90	3.90	3.90	3.90

These are overall, upper bound concentrations resulting solely from the pesticidal use of ammonium thiosulfate on lawns. These concentrations do not differentiate between solvated and ammonia gas. Ammonia has a Henry's Law Constant of ammonia of 3.5×10^{-6} atm-m³/mole (1.41×10^{-4} , unitless) at 25° C. Volatilization of ammonia is dependent on temperature and pH of the media and increases with increasing temperature and pH. In addition, these exposure estimates do not take into account assimilation (uptake by organisms), binding to humic acids and clays in soils, nitrification in soil/water body, atmospheric oxidation reactions of volatilized ammonia, or the contribution from ammonia fertilizers.

Risk

As described in the Section III.B.1. of this RED document, ammonium thiosulfate will quickly dissociate in the environment into ammonium and thiosulfate, both of which are considered in the aquatic risk assessment. Thiosulfate would be incorporated into the natural sulfur cycle, where the thermodynamically-stable end product is sulfate. Since sulfur is ubiquitous, naturally occurring, and comes from many sources, the increase in the amount of sulfate in the environment due to the pesticidal use of ammonium thiosulfate is unlikely to make a significant contribution to overall sulfate exposure. Therefore, no aquatic exposure modeling was performed for sulfate. The risk of sulfate to aquatic organisms via the pesticidal use of ammonium thiosulfate is negligible.

For ammonium, aquatic exposures were estimated using the Tier 1 GENEEC model and adjusted for the percent of the area treated. Ammonium EECs were then adjusted using equilibrium equations to estimate ammonia concentrations at three pH levels (5, 7, and 9). Based on the Agency’s national criterion for ammonia in fresh water, aquatic life should be protected if both of the following conditions are satisfied:

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion). Different equilibrium equations are used to calculate the CMC at a particular pH in water for water bodies in which salmonid fish are or are not present.
2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed the CCC (chronic criterion). Two equations are used for this CCC, accounting for the presence or absence of fish in their early life stages.

These criteria were calculated assuming a temperature of 25°C at pH 5, 7, and 9. As shown in Table 7, the highly conservative GENEEC model estimated aquatic EECs for ammonia are all below the national water criteria. It is important to keep in mind that the GENEEC modeled EECs are upper bound concentrations and do not take into account uptake by organisms, binding to humic acids and clays in soils, nitrification in soil/water body, or atmospheric oxidation reactions of volatilized ammonia. This analysis suggests that the pesticidal use of ammonium thiosulfate poses negligible risk to aquatic organisms over a range of water quality characteristics.

PTA Corrected	3.90	2.77E-6	2.79E-4	0.027
National Water Acute Criterion (Salmonid)		38.759	24.103	0.885
National Water Acute Criterion (Non-Salmonid)		58.039	36.093	1.324
National Water Chronic Criterion (Fish early life stage-present) at 25°C		3.599	3.000	0.233

Table 7. Comparison of GENEEC modeled aquatic EECs versus national water criteria for ammonia.

GENEEC EECs	Peak Ammonium Concentration (mg/L)	Peak Ammonia Concentration ¹ (mg N/L)		
		pH 5	pH 7	pH 9
National Water Chronic Criterion (Fish early life stage-absent) at 25°C		3.599	3.000	0.233

¹ Ammonia concentration estimated using following equation: $\log(\text{NH}_3(\text{g})) = -11.04 + \log(\text{NH}_4^+) + \text{pH}$

IV. Risk Management and Reregistration Decision

A. Determination of Reregistration Eligibility

Section 4(g)(2)(A) of FIFRA calls for the Agency to determine, after submission of relevant data concerning an active ingredient, whether or not products containing the active ingredient are eligible for reregistration. The Agency has previously identified and required the submission of the generic (i.e., active ingredient-specific) data required to support reregistration of products containing ammonium thiosulfate as an active ingredient. The Agency has completed its review of these generic data, and has determined that the data are sufficient to support reregistration of all products containing ammonium thiosulfate.

The Agency has completed its assessment of the human health and ecological risks associated with the use of pesticide products containing ammonium thiosulfate. The Agency has determined that ammonium thiosulfate products are eligible for reregistration provided the risk mitigation measures outlined in this document are adopted and label amendments are made to implement these mitigation measures, as outlined in Chapter V. Appendix A summarizes the uses of ammonium thiosulfate that are eligible for reregistration. Appendix B identifies the generic data that the Agency reviewed as part of its determination of reregistration eligibility of ammonium thiosulfate, and lists the submitted studies that the Agency found acceptable. Data gaps are identified as generic data requirements that have not been satisfied with acceptable data. Should a registrant fail to implement any of the reregistration requirements identified in this document, the Agency may take regulatory action to address these concerns.

B. Requirements for Reregistration

Ammonium thiosulfate products are eligible for reregistration provided that registrants comply with the requirements outlined in this document including the following: (1) submit required data and (2) implement risk mitigation measures.

1) Required Data

Ammonium thiosulfate products are eligible for reregistration provided that registrants submit data as required by the product-specific data call-ins that EPA intends to issue as a result of this RED (see Section V). The generic database supporting the reregistration of ammonium thiosulfate uses has been reviewed and determined to be adequate to support a reregistration eligibility decision.

2) Risk Mitigation

Products containing ammonium thiosulfate are eligible for reregistration provided the specific labeling requirements required in Table 8 are reflected on the ammonium thiosulfate labels.

C. Regulatory Rationale

The Agency has determined that ammonium thiosulfate is eligible for reregistration provided that the requirements for reregistration outlined in this document are implemented. Provided that registrants comply with the requirements of this RED, EPA believes that ammonium thiosulfate will not present risks inconsistent with FIFRA.

1. Human Health and Ecological Risk

Ammonium thiosulfate is currently formulated as a liquid soluble concentrate. It is mixed with water and applied to dichondra and bladegrass lawns by residential handlers. EPA has conducted human health and ecological risk assessments for ammonium thiosulfate to support the reregistration eligibility decision. In its assessments, EPA concluded that there are no outstanding human health or ecological risks due to the use of ammonium thiosulfate as a pesticide product that are below the Agency's level of concern.

However, some label changes will be required to update ammonium thiosulfate labels. In order to promote label consistency, the following maximum rate statement is required on ammonium thiosulfate labels: "Maximum single application rate: 1.7 lbs ai/1000 square feet."

In addition, in order to reduce the opportunity for exposure to ammonia to residential users when mixing the ammonium thiosulfate pesticide product, the ammonium thiosulfate labels must be revised to read, "Mix in a well ventilated area."

Finally, in order to reduce the opportunity for aquatic exposure, the following statement is required on ammonium thiosulfate labels:

"Do not apply directly to or near water, storm drains, gutters, sewers, or drainage ditches. Do not apply when windy. To prevent product run-off, do not over water the treated area(s) to the point of runoff or apply when raining or when rain is expected that day. Rinse application equipment over lawn or garden area only."

2. Endocrine Screening

EPA is required under the FFDCFA, as amended by FQPA, to develop a screening program to determine whether certain substances (including all pesticide active and other ingredients) "may have an effect in humans that is similar to an effect produced by a naturally occurring estrogen, or other such endocrine effects as the Administrator may designate." Following the recommendations of its Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC), EPA determined that there were scientific bases for including, as part of the program, androgen and thyroid hormone systems, in addition to the estrogen hormone system. EPA also adopted EDSTAC's recommendation that the Program include evaluations of potential effects in wildlife. For pesticide chemicals, EPA will use FIFRA and, to the extent that effects in wildlife may help determine whether a substance may have an effect in humans, FFDCFA authority to require the wildlife evaluations. When the appropriate screening and/or

testing protocols being considered under the Agency's Endocrine Disrupter Screening Program (EDSP) have been developed and vetted, there may be additional screening and/or testing required for the pesticidal use of ammonium thiosulfate.

3. Endangered Species

The Agency has developed the Endangered Species Protection Program to identify pesticides whose use may cause adverse impacts on endangered and threatened species and to implement mitigation measures that address these impacts. The Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize listed species or adversely modify designated critical habitat. To analyze the potential of registered pesticide uses that may affect any particular species, EPA uses basic toxicity and exposure data and considers ecological parameters, pesticide use information, geographic relationship between specific pesticide uses and species locations, and biological requirements and behavioral aspects of the particular species. When conducted, these analyses take into consideration any regulatory changes recommended in this RED being implemented at that time.

The ecological assessment that EPA conducted for this RED does not, in itself, constitute a determination as to whether specific species or critical habitat may be harmed by the pesticide. Rather, this assessment serves as a screen to determine the need for any species-specific assessment that will evaluate whether exposure may be at levels that could cause harm to specific listed species and their critical habitat. The species-specific assessment refines the screening-level assessment to take into account information such as the geographic area of pesticide use in relation to the listed species and the habits and habitat requirements of the listed species. If the Agency's specific assessments for the pesticidal use of ammonium thiosulfate result in the need to modify use of the pesticide, any geographically specific changes to the pesticide's registration will be implemented through the process described in the Agency's *Federal Register* Notice (54 FR 27984) regarding implementation of the Endangered Species Protection Program.

Risk findings are based solely on EPA's qualitative assessment for ammonium thiosulfate and do not constitute "may affect" findings under the ESA. A determination that there is a likelihood of potential effects to a listed species may result in limitations on the use of the pesticide, other measures to mitigate any potential effects, and/or consultations with the Fish and Wildlife Service or National Marine Fisheries Service, as necessary. If the Agency determines use of ammonium thiosulfate "may affect" listed species or their designated critical habitat, EPA will employ the provisions in the Services regulations (50 CFR Part 402).

V. What Registrants Need to Do

The Agency has determined that the products containing ammonium thiosulfate (PC 080103) are eligible for reregistration provided that the mitigation measures and label changes identified in this RED are implemented. Registrants will need to amend their product labeling to incorporate the label statements set forth in the Label Changes Summary Table 8. The Agency intends to issue a Data Call-In (DCI) requiring product-specific data. Generally, the registrant will have 90 days from receipt of a DCI to complete and submit response forms or request time extensions and/or waivers with a full written justification. For product-specific data, the registrant will have eight months to submit data and amended labels.

A. Manufacturing Use Products

1. Additional Generic Data Requirements

The generic database supporting the reregistration of the pesticidal use of ammonium thiosulfate has been reviewed and determined to be complete for reregistration. No generic data requirements will be required at this time.

2. Labeling for Manufacturing-Use Products

To ensure compliance with FIFRA, manufacturing-use product (MUP) labeling should be revised to comply with all current EPA regulations, PR Notices, and applicable policies. The MUP labeling should bear the labeling contained in Table 8.

B. End-Use Products

1. Additional Product-Specific Data Requirements

Section 4(g)(2)(B) of FIFRA calls for the Agency to obtain any needed product-specific data regarding the pesticide after a determination of eligibility has been made. The Registrant must review previous data submissions to ensure that they meet current EPA acceptance criteria and if not, commit to conduct new studies. If a registrant believes that previously submitted data meet current testing standards, then the study MRID numbers should be cited according to the instructions in the Requirement Status and Registrants Response Form provided for each product. The Agency intends to issue a separate product-specific data call-in (PDCI), outlining specific data requirements. For any questions regarding the PDCI, please contact Moana Appleyard at (703) 308-8175.

2. Labeling for End-Use Products

To be eligible for reregistration, labeling changes are necessary to implement measures outlined in Section IV above. Specific language to incorporate these changes is specified in Table 8. Generally, conditions for the distribution and sale of products bearing old labels/labeling will be established when the label changes are approved. However, specific

existing stocks time frames will be established case-by-case, depending on the number of products involved, the number of label changes, and other factors.

C. Labeling Changes Summary Table

In order to be eligible for reregistration, amend all product labels to comply with the following table. Table 8 describes how language on the labels should be amended.

Labeling Changes Summary Table

In order to be eligible for reregistration, amend all product labels to incorporate the risk mitigation measures outlined in Section IV. The following table describes how language on the labels should be amended.

Table 8. Summary of Labeling Changes for Ammonium Thiosulfate		
Description	Amended Labeling Language	Placement on Label
Manufacturing Use Products*		
For all Manufacturing Use Products	“Only for formulation into an <i>herbicide</i> for the following use(s) [fill blank only with those uses that are being supported by MP registrant].”	Directions for Use
One of these statements may be added to a label to allow reformulation of the product for a specific use or all additional uses supported by a formulator or user group	<p>“This product may be used to formulate products for specific use(s) not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s).”</p> <p>“This product may be used to formulate products for any additional use(s) not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s).”</p>	Directions for Use
Environmental Hazards Statements Required by the RED and Agency Label Policies	“Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.”	Precautionary Statements

End Use Products		
PPE Requirements Established by the RED	<p>“All mixers, loaders, applicators, and other handlers must wear the following PPE: - long-sleeved shirt and long pants, and - shoes plus socks.”</p>	<p>Immediately following/below Precautionary Statements: Hazards to Humans and Domestic Animals</p>
User Safety Recommendations	<p>“User Safety Recommendations</p> <p>Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.</p> <p>Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.</p> <p>Users should remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.”</p>	<p>Precautionary Statements under: Hazards to Humans and Domestic Animals immediately following Engineering Controls</p> <p>(Must be placed in a box.)</p>
User Safety Requirements	<p>“Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.”</p>	<p>Precautionary Statements: Hazards to Humans and Domestic Animals immediately following the PPE requirements</p>

Application Restrictions	“Do not apply this product in a way that will contact any person or pet, either directly or through drift. Keep people and pets out of the area during application.”	Directions for Use under General Precautions and Restrictions
Entry Restrictions for liquids	“Do not allow people or pets to enter the treated area until sprays have dried.”	Directions for use under General Precautions and Restrictions
Environmental Hazard Statement	“Do not apply directly to water. Do not contaminate water when disposing of equipment wash waters or rinsate.”	Precautionary Statements immediately following the User Safety Recommendations

<p>Other Application Restrictions</p> <p>Note: maximum single and maximum yearly application rates must be expressed in pounds of formulation per 1000 square feet in addition to pounds active ingredient per 1000 square feet.</p>	<p>“Not for use on turf being grown for sale or other commercial or research use, such as sod production or turf seed production. For use on turf grown in residential settings, such as lawns, or grounds around apartment buildings or other residential sites.”</p> <p>Labels must be amended to reflect the following maximum application rates and the maximum number of treatments per year:</p> <p>“Maximum single application rate: 1.7 lbs ai/1000 square feet.”</p> <p>“Mix in a well ventilated area.”</p> <p>“Do not apply directly to or near water, storm drains, gutters, sewers, or drainage ditches. Do not apply when windy. To prevent product run-off, do not over water the treated area(s) to the point of runoff or apply when raining or when rain is expected that day. Rinse application equipment over lawn or garden area only.”</p>	<p>Directions for Use under Other Use Precautions</p>
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* At the time of reregistration, there are no registered ammonium thiosulfate pesticidal manufacturing use products. If in the future, ammonium thiosulfate manufacturing use products are registered, label statements from the manufacturing use products section of the Labeling Changes table will be required on those labels.

Appendix A: Use Patterns Subject to Reregistration of 4-Aminopyridine (PC Code 069201)

Target Pests	Site	Application Rate Restrictions	Formulation	Directions for Use
Oxalis and spurge	Residential lawns	Maximum rate: 1.7 lbs ai/1000 square feet	Liquid soluble concentrate	See Table 8 in Section V of the ammonium thiosulfate RED.

Appendix B. Table of Generic Data Requirements and Studies Used to Make the Reregistration Decision

GUIDE TO APPENDIX B

Appendix B contains a listing of data requirements which support the reregistration for active ingredients within the 4-AP case covered by this RED. It contains generic data requirements that apply 4-AP in all products, including data requirements for which a “typical formulation” is the test substance.

The data table is organized in the following formats:

1. Data requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR 158. The reference numbers accompanying each test refer to the test protocols set in the Pesticide Assessment Guidance, which is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. (703) 487-4650.
2. Use Pattern (Column 2). This column indicates the use patterns for which the data requirements apply. The following letter designations are used for the given use patterns.
 - A. Terrestrial food
 - B. Terrestrial feed
 - C. Terrestrial non-food
 - D. Aquatic food
 - E. Aquatic non-food outdoor
 - F. Aquatic non-food industrial
 - G. Aquatic non-food residential
 - H. Greenhouse food
 - I. Greenhouse non-food
 - J. Forestry
 - K. Residential
 - L. Indoor food
 - M. Indoor non-food
 - N. Indoor medical
 - O. Indoor residential
3. Bibliographic Citation (Column 3). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a “GS” number if no MRID number has been assigned. Refer to the Bibliography appendix for a complete citation of the study.

APPENDIX B.

Data Supporting Guideline Requirements for the Reregistration of 4-Aminopyridine				
New Guideline Number	Old Guideline Number	Study Description	Use Pattern	Citation(s)
TOXICOLOGY				
870.1100	81-1	Acute Oral Toxicity-Rat	All	41647405
870.1200	81-2	Acute Dermal Toxicity-Rabbit	All	41647406
870.1300	81-3	Acute Inhalation – Rat	All	41647407
870.2400	81-4	Primary Eye Irritation – Rabbit	All	41647408
870.2500	81-5	Primary Dermal Inhalation	All	41647409
870.2600	81-6	Dermal Sensitization	All	41647410
PRODUCT CHEMISTRY				
NA	61-1	Chemical Identity	All	41647401
NA	61-2	Description of Beginning Materials and Manufacturing Process	All	41647401
NA	62-2	Certification of Limits	All	41647402
NA	62-3	Analytical Method	All	41647402
NA	63-0	Reports of Multiple Phys/Chem Characteristics	All	41647403

Appendix C. Technical Support Documents

Additional documentation in support of this RED is maintained in the OPP docket, EPA-HQ-OPP-2007-1160.

It is open Monday through Friday, excluding legal holidays, from 8:30 am to 4 pm.

All documents, in hard copy form, may be viewed in the OPP docket room or downloaded or viewed via the Internet at the following site: www.epa.gov/pesticides/reregistration

These documents include:

HED Document:

Ammonium Thiosulfate HED Human Health Risk Assessment for the RED. PC Code 080103, DP#342047. Drew, D., Tadayon, S., and Liccione, J. Dated 09/28/07.

EFED Documents:

Ammonium Thiosulfate. CAS Reg. No. 7783-18-8 (Solution); 7664-41-7 (Anhydrous). Ecological Risk Assessment. Flaherty, C., Hetrick, J., and Termes, S.C. Dated 09/13/07.

Appendix D. Citations Considered to be Part of the Data Base Supporting the Reregistration Eligibility Decision

Cotton, F.A. and Wilkinson, G. *Advanced Inorganic Chemistry*, Fifth Edition, John Wiley and Sons,

Appendix E. List of Available Related Documents and Electronically Available Forms

Pesticide Registration Forms are available via the Agency's website at <http://www.epa.gov/opprd001/forms/>.

Pesticide Registration Forms (These forms are in PDF format and require the Acrobat reader)

Instructions

1. Print out and complete the forms. (Note: Form numbers that are bolded can be filled out on your computer then printed).
2. The completed form(s) should be submitted in hard copy in accord with the existing policy.
3. Mail the forms, along with any additional documents necessary to comply with EPA regulations covering your request, to the address below for the Document Processing Desk.

DO NOT fax or e-mail any form containing 'Confidential Business Information' or 'Sensitive Information.'

If you have any problems accessing these forms, please contact Nicole Williams at (703) 308-5551 or by e-mail at williams.nicole@epa.gov.

The following Agency Pesticide Registration Forms are currently available via the Internet at the following locations:

8570-1	Application for Pesticide Registration/Amendment	http://www.epa.gov/opprd001/forms/8570-1.pdf
8570-4	Confidential Statement of Formula	http://www.epa.gov/opprd001/forms/8570-4.pdf
8570-5	Notice of Supplemental Registration of Distribution of a Registered Pesticide Product	http://www.epa.gov/opprd001/forms/8570-5.pdf
8570-17	Application for an Experimental Use Permit	http://www.epa.gov/opprd001/forms/8570-17.pdf
8570-25	Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need	http://www.epa.gov/opprd001/forms/8570-25.pdf
8570-27	Formulator's Exemption Statement	http://www.epa.gov/opprd001/forms/8570-27.pdf
8570-28	Certification of Compliance with Data Gap Procedures	http://www.epa.gov/opprd001/forms/8570-28.pdf
8570-30	Pesticide Registration Maintenance Fee Filing	http://www.epa.gov/opprd001/forms/8570-30.pdf
8570-32	Certification of Attempt to Enter into an Agreement with other Registrants for Development of Data	http://www.epa.gov/opprd001/forms/8570-32.pdf
8570-34	Certification with Respect to Citations of Data (PR Notice 98-5)	http://www.epa.gov/opppmsd1/PR_Notices/pr98-5.pdf
8570-35	Data Matrix (PR Notice 98-5)	http://www.epa.gov/opppmsd1/PR_Notices/pr98-5.pdf
8570-36	Summary of the Physical/Chemical Properties (PR Notice 98-1)	http://www.epa.gov/opppmsd1/PR_Notices/pr98-1.pdf
8570-37	Self-Certification Statement for the Physical/Chemical Properties (PR Notice 98-1)	http://www.epa.gov/opppmsd1/PR_Notices/pr98-1.pdf

Pesticide Registration Kit <http://www.epa.gov/pesticides/registrationkit/>

Dear Registrant:

For your convenience, we have assembled an online registration kit which contains the following pertinent forms and information needed to register a pesticide product with the U.S. Environmental Protection Agency's Office of Pesticide Programs (OPP):

1. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA) as Amended by the Food Quality Protection Act (FQPA) of 1996.
2. Pesticide Registration (PR) Notices
 - a. 83-3 Label Improvement Program--Storage and Disposal Statements
 - b. 84-1 Clarification of Label Improvement Program
 - c. 86-5 Standard Format for Data Submitted under FIFRA
 - d. 87-1 Label Improvement Program for Pesticides Applied through Irrigation Systems (Chemigation)
 - e. 87-6 Inert Ingredients in Pesticide Products Policy Statement
 - f. 90-1 Inert Ingredients in Pesticide Products; Revised Policy Statement
 - g. 95-2 Notifications, Non-notifications, and Minor Formulation Amendments
 - h. 98-1 Self Certification of Product Chemistry Data with Attachments (This document is in PDF format and requires the Acrobat reader.)

Other PR Notices can be found at [http://www.epa.gov/oppmsd1/PR Notices](http://www.epa.gov/oppmsd1/PR%20Notices)

3. Pesticide Product Registration Application Forms (These forms are in PDF format and will require the Acrobat reader).
 - a. EPA Form No. 8570-1, Application for Pesticide Registration/Amendment
 - b. EPA Form No. 8570-4, Confidential Statement of Formula
 - c. EPA Form No. 8570-27, Formulator's Exemption Statement
 - d. EPA Form No. 8570-34, Certification with Respect to Citations of Data
 - e. EPA Form No. 8570-35, Data Matrix
4. General Pesticide Information (Some of these forms are in PDF format and will require the Acrobat reader).
 - a. Registration Division Personnel Contact List
 - b. Biopesticides and Pollution Prevention Division (BPPD) Contacts
 - c. Antimicrobials Division Organizational Structure/Contact List
 - d. 53 F.R. 15952, Pesticide Registration Procedures; Pesticide Data Requirements (PDF format)
 - e. 40 CFR §156, Labeling Requirements for Pesticides and Devices (PDF format)
 - f. 40 CFR §158, Data Requirements for Registration (PDF format)
 - g. 50 F.R. 48833, Disclosure of Reviews of Pesticide Data (November 27, 1985)

Before submitting your application for registration, you may wish to consult some additional sources of information. These include:

1. The Office of Pesticide Programs' website.

2. The booklet “General Information on Applying for Registration of Pesticides in the United States,” PB92-221811, available through the National Technical Information Service (NTIS) at the following address:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161-0002

The telephone number for NTIS is (703) 605-6000.

3. The National Pesticide Information Retrieval System (NPIRS) of Purdue University’s Center for Environmental and Regulatory Information Systems. This service does charge a fee for subscriptions and custom searches. You can contact NPIRS by telephone at (765) 494-6614 or through their website.
4. The National Pesticide Information Center (NPIC) can provide information on active ingredients, uses, toxicology and chemistry of pesticides. You can contact NPIC by telephone at (800) 858-7378 or through their website at <http://www.ncis.orst.edu>.

The Agency will return a notice of receipt of an application for registration or amended registration, experimental use permit, or amendment to a petition if the applicant or petitioner encloses with his submission a stamped, self-addressed postcard. The postcard must contain the following entries to be completed by OPP:

- Date of receipt;
- EPA identifying number; and
- Product Manager assignment.

Other identifying information may be included by the applicant to link the acknowledgment of receipt to the specific application submitted. EPA will stamp the date of receipt and provide the EPA identifying file symbol or petition number for the new submission. The identifying number should be used whenever you contact the Agency concerning an application for registration, experimental use permit, or tolerance petition.

To assist us in ensuring that all data you have submitted for the chemical are properly coded and assigned to your company, please include a list of all synonyms, common and trade names, company experimental codes, and other names which identify the chemical (including “blind” codes used when a sample was submitted for testing by commercial or academic facilities). Please provide a chemical abstract system (CAS) number if one has been assigned.