Registration Decision for the New Active Ingredient Ferrous Sulfate Heptahydrate

A herbicide for the control of moss on a variety of non-agricultural use sites (turf, lawns and tree trunks)

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1. Introduction

This document announces that the Environmental Protection Agency (EPA) has completed its initial evaluation of the new biochemical active ingredient (AI), ferrous sulfate heptahydrate, for use as an herbicide and has concluded that it meets the regulatory and safety standards under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food, Drug and Cosmetic Act (FFDCA). EPA's assessment of ferrous sulfate heptahydrate was also considered relative to a public participation process, which allowed for a 15-day comment period.

Ferrous sulfate heptahydrate, also known as iron sulfate heptahydrate, is a greenish-brown, soluble granular solid. It is soluble in water and practically insoluble in alcohol. Ferrous sulfate heptahydrate is a part of the group of active ingredients currently recognized by the EPA as 'Iron Salts' and includes ferric sulfate and ferrous sulfate monohydrate. Ferrous sulfate heptahydrate is chemically identical to the registered active ingredient ferrous sulfate differing only in in the water content (monohydrate vs. heptahydrate).

With regard to human exposure and historical risk, iron is the fourth most abundant element in the natural environment; and humans have been regularly exposed to iron and its salts, including ferrous sulfate heptahydrate, without acute toxicological effects. Specifically, ferrous sulfates are a range of salts within the 'iron salts' family and are characterized by their unique sulfate and hydrate bonds. Ferrous sulfates are naturally ubiquitous in the environment and are normal constituents of the human diet and are metabolized and utilized by the body. Ferrous sulfates are naturally present in our foods and are also added to flour and grain products for fortification. In the United States the main use of iron salts, such as ferrous sulfate heptahydrate, is non-pesticidal as a fertilizer micronutrient. Ferrous sulfates are also used as animal feed additives, coagulants, water purification and sewage treatments, and as dietary supplements for humans who have an iron deficiency. Notably, the expected pesticidal exposure should be far below its approved supplemental uses. Given the lack of concern for significant new exposure or toxicity, expected residential exposures to the compound are considered inconsequential and are not expected to be of toxicological concern.

As a pesticidal active ingredient, the use pattern of all the iron salts, including the active ingredient ferrous sulfate heptahydrate, is for the control of moss. With specific regard to the mode of action, ferrous sulfate heptahydrate causes a pH shift in the moss, which effectively results in moss lethality. The end-use product (EP), No Mas (EPA File Symbol# 7001-TTIL), is an EP intended for use to control moss on turf/lawns, at the base of tree trunks, and any outdoor landscaped areas that have moss growing on the surface. The EP is intended to be mixed with 2-3 gallons of water per pound and applied with hand-held spray equipment. Based on label's directions for use, application rates are between 50-75 pounds of active ingredient per acre. No Personal Protective Equipment (PPE) are required for this EP.

After reviewing the submitted and publicly available data and information for ferrous sulfate heptahydrate, EPA has concluded that there is a reasonable certainty of no harm from residues of this new active ingredient and that its use will not cause unreasonable adverse effects to human health or the environment. Therefore, the Agency is granting the unconditional registration of one EP, No Mas (EPA File Symbol: 7001-TTIL), containing the new active ingredient, ferrous sulfate heptahydrate, under FIFRA section 3(c)(5). The new active

ingredient is intended for the control of moss on turf, lawns and on tree trunks. No food uses are associated with this EP.

2. Background

On July 13, 2022, EPA received an application from JR Simplot Company for the registration of one EP containing the new biochemical active ingredient, ferrous sulfate heptahydrate. The new active ingredient is intended for the control of moss on turf, lawns and on tree trunks. JR Simplot Company provided a combination of guideline studies, data waiver requests and scientific rationales supported by information from the open scientific literature to address product chemistry, human health, and ecological toxicity data requirements.

In the Federal Register of February 23, 2023, EPA published a Notice of Receipt (NOR) that announced receipt of one new EP containing the new active ingredient, ferrous sulfate heptahydrate. No comments were received in response to the NOR.

3. Evaluation

In evaluating a pesticide registration application, EPA assesses a variety of studies to determine the likelihood of adverse effects (i.e., risk) from exposures associated with the use of the pesticide product. Risk assessments are developed to evaluate how the active ingredient might affect a range of non-target organisms, including humans and terrestrial and aquatic wildlife (plants and animals). Based on these assessments, EPA evaluates and approves language for each pesticide label to ensure the directions for use and safety measures are appropriate to mitigate any potential risk. In this way, the pesticide's label helps to communicate essential limitations and/or mitigations that are necessary for public and environmental safety. In fact, it is a violation of FIFRA to use a registered pesticide in a manner inconsistent with the label.

3.1 Assessment of Risk to Human Health

To assess risks to human health from use of biochemical pesticides, EPA evaluates the potential toxicity of a product, and the likelihood, amount, and types of exposure users and bystanders are likely to experience. In conducting a risk assessment, EPA must consider: (1) the hazards of a substance and (2) the direct or indirect human exposure to that substance as a consequence of use. EPA uses this information to assess and characterize the risk(s) and predict the probability, nature, and magnitude of the adverse health effects that may occur from use of the substance in the manner described.

To evaluate the toxicity of biochemical pesticides, EPA typically requires a range of Tier I data: acute toxicity data (acute oral toxicity, acute inhalation toxicity, acute dermal toxicity); irritation tests (primary eye irritation, primary dermal irritation, and dermal sensitization); subchronic testing (90-day oral, 90-day dermal, and 90-day inhalation); mutagenicity testing (bacterial reverse mutation test and in vitro mammalian cell assay); and developmental toxicity testing (prenatal development). Tiers II and III testing requirements are triggered only when there is indication, usually through lower tier testing, that a biochemical pesticide has unusual characteristics, such as subchronic toxicity, or is suspected or known to be a carcinogen.

3.1.1 Toxicological Data/Information

Adequate mammalian toxicology data/information are available to support a non-food use registration of ferrous sulfate heptahydrate. All toxicology data requirements for ferrous sulfate heptahydrate have been satisfied and a qualitative risk assessment is available in the regulatory docket (search for "EPA-HQ-OPP-2022-0642" at http://www.regulations.gov).

The toxicology database used for the biopesticide risk assessment for ferrous sulfate heptahydrate includes: 1) guideline acute toxicity data; and 2) rationales to satisfy the 90-day oral toxicity, 90-day dermal toxicity, 90-day inhalation toxicity, developmental toxicity, and mutagenicity data requirements. Tier II and Tier III studies have not been triggered and are not required at this time. Additionally, no relevant toxicity data for this active ingredient were found in a search of the literature. The Agency has assessed risks to human health qualitatively due to the ubiquitous nature of iron salt compounds and the lack of hazard concern for these compounds. To date, there are no hazard concerns in the database for the pesticidal use pattern of any iron salts, including ferrous sulfate heptahydrate. Any exposure to the inorganic salt, ferrous sulfate heptahydrate, is of little concern from a toxicity perspective; and any potential pesticidal exposure is considered inconsequential. The toxicology data requirements and the toxicological profile for ferrous sulfate heptahydrate are discussed in the following sections.

Acute Toxicity

All acute toxicity data requirements were satisfied by guideline studies and indicate a low toxicity profile. The data submitted for ferrous sulfate heptahydrate support the active ingredient being classified as Toxicity Category IV for acute dermal and inhalation toxicity, and primary dermal irritation, and Category III for acute oral toxicity and primary eye irritation. Lastly, available data indicate it is not a skin sensitizer. The signal word "CAUTION" will be used on the product label containing the active ingredient ferrous sulfate hydrate.

Subchronic Toxicity (90-day oral toxicity, 90-day dermal toxicity and 90-day inhalation toxicity)

Waiver rationales were submitted for the 90-day oral toxicity, 90-day dermal toxicity and 90-day inhalation toxicity data requirements (MRID 51930410) and were granted based on a weight of the evidence (WOE) approach that considered all of the available hazard and exposure information. No subchronic toxicology data were required due to the unlikelihood of significant exposure and the overall low toxicity profile of the salt. Specifically, dermal and oral exposure to ferrous sulfate heptahydrate is expected to be minimal as the salt rapidly disassociates into inorganic and nontoxic ions. The salt does not volatilize and as such is not available for inhalation. Low exposure notwithstanding, ferrous sulfate heptahydrate has no known toxic endpoints and is not acutely toxic.

90-day oral toxicity

Oral exposure is not anticipated because the EP is for non-food use only. Exposure via drinking water is also not anticipated as the EP will not be applied directly to water or in areas

where surface water is present. Additionally, in the presence of water the active ingredient dissociates into ions that are found naturally in the environment and have no known history of toxic effect.

90-day dermal toxicity

Significant dermal exposure is not anticipated because any dermal exposure would be transient due to the physical and chemical properties of ferrous sulfate heptahydrate. As a solid inorganic ionic salt with high water solubility there is a low probability for skin penetration as it would either be too structurally incompatible as a solid to penetrate skin tissue or it would readily dissociate into nontoxic ions upon any contact with dermal moisture before any potential penetration.

90-day inhalation toxicity

Significant inhalation exposure is not anticipated because there is no exposure to the active ingredient as a gas, aerosol, or vapor. Furthermore, ferrous sulfate heptahydrate is not likely to volatilize as an inorganic solid compound; and if any solid salt particles were indeed inhaled, they would be readily dissociated into nontoxic ions upon contact with moisture in the respiratory pathway before it could result in any significant inhalation exposure. In short, ferrous sulfate heptahydrate cannot be readily inhaled.

Equally significant, humans are regularly exposed to ferrous sulfate heptahydrate and have a known capacity to metabolize the compound and its metabolites. Ferrous sulfate heptahydrate is naturally-occurring in the environment and humans have a long history of exposure to this salt without known toxic effects. Indeed, ferrous sulfate heptahydrate is approved for use by the Food and Drug Administration (FDA) in personal care products, medicines, and foods. It has been granted Generally Recognized as Safe (GRAS) status by FDA (21 CFR 184.1315); and is currently used as a fortifying agent in food, a dietary supplement to treat iron-deficiency anemia, and as a nutritional supplement in infant formulas with no limitation other than current good manufacturing practice and adherence to the specifications of the Food Chemicals Codex.

Developmental Toxicity

The data requirement for developmental toxicity was satisfied with the submission of an acceptable waiver rationale (also in MRID 51930410), which was nearly identical to the subchronic toxicity data waiver rationales discussed above. In short, ferrous sulfate heptahydrate is of low toxicity; and significant exposure from use as a pesticide is not anticipated. Again, exposure to ferrous sulfate heptahydrate is expected to be minimal as the compound rapidly dissociates into inorganic ions with no known toxicity. Specifically, ferrous sulfate heptahydrate is not physically available for inhalation as it is a largely irrespirable solid that does not readily volatilize, and any solid salt particles that might be inhaled would readily dissociate in the moisture of the respiratory pathway before it could result in any significant exposure. Minimal exposure notwithstanding, humans are exposed to ferrous sulfate heptahydrate naturally in the environment and through a variety of dietary supplements and medicines without any known toxicological effect. Importantly, humans regularly metabolize ferrous sulfate heptahydrate and its constituents without any known toxic effects.

Genotoxicity

The data requirements for genotoxicity were satisfied through acceptable waiver rationales, citing several non-guideline studies (MRID 51930410). EPA's assessment affirmed that it is unlikely that iron salts would have any genotoxic effects in humans and other mammals based on the continuous exposure of humans and other mammals to iron and sulfate compounds over many generations. Several non-guideline studies further indicated that ferrous sulfate heptahydrate is not genotoxic. In a non-guideline Ames test, ferrous sulfate heptahydrate tested negative and did not induce mutations in the *Salmonella typhimurium* strains TA92, TA1535, TA100, TA1537, TA94, and TA98 in the presence or absence of metabolic activation. A non-guideline *in vivo* micronucleus test found that ferrous sulfate heptahydrate did not induce micronuclei in bone marrow erythrocytes, confirming the AI as negative in this assay.

3.1.2 Dietary and Occupational Exposure and Risks

Dietary and Drinking Water Exposure and Risk Characterization

A quantitative dietary (food) and drinking water exposure and risk assessment has not been conducted at this time. The active ingredient is not for use on food; therefore, dietary exposure is not expected.

Additionally, based on the use pattern and the fact that ferrous sulfate heptahydrate rapidly degrades in the environment and readily dissociates into ions in water, there are no risks of concern for exposure to ferrous sulfate heptahydrate in drinking water. Further, iron sulfate compounds are naturally-occuring in the environment and there is a long history of exposure to ferrous sulfate heptahydrate through the human diet without known toxic effects.

Residential (Non-occupational) Exposure and Risk Characterization

Ferrous sulfate heptahydrate is intended for use in residential (non-occupational) settings. A quantitative residential handler and post-application exposure and risk assessment has not been conducted due to the unlikelihood of significant exposure and a low toxicity profile. Residential handler risk and post-application risk were assessed qualitatively based on the following: 1) the natural occurrence and long history of human exposure to iron sulfate salts; 2) the AI is not expected to have significant dermal penetration due to the physical chemical properties (i.e., it is an inorganic salt, highly soluble in water, and rapidly dissociates into its respective anions and cations in aqueous media); 3) the AI does not easily volatilize because of its physicochemical properties, so significant inhalation exposure is not expected; and 4) low toxicity of the active ingredient (no toxicological endpoints identified). Based on the available information, there are no residential risks of concern for the pesticidal uses of this active ingredient.

Occupational Exposure and Risk Characterization

Short and intermediate-term dermal and inhalation exposures to ferrous sulfate heptahydrate are anticipated for occupational handlers. There is also potential for post-application exposure for workers entering treated areas. However, the inorganic salt is of little concern from a toxicity perspective. Occupational handler risk and post-application risk were assessed qualitatively based on the following:

1) the natural occurrence and long history of human exposure to iron sulfate salts; 2) the AI is not expected to have significant dermal penetration due to the physical chemical properties (i.e., it is an inorganic salt, highly soluble in water, and rapidly dissociates into its respective anions and cations in aqueous media); 3) the AI does not easily volatilize because of its physicochemical properties, so significant inhalation exposure is not expected; and 4) low toxicity of the active ingredient (no toxicological endpoints identified). Based on the available information, there are no occupational risks of concern for the pesticidal uses of this active ingredient.

3.1.3 Cumulative Risk

EPA has not made a common mechanism of toxicity finding for ferrous sulfate heptahydrate and any other substances, and this biopesticide does not appear to produce a toxic metabolite produced by other substances. Therefore, EPA has not assumed that ferrous sulfate heptahydrate has a common mechanism of toxicity with other substances.

3.1.4 Human Health Conclusions

EPA concludes that the use of ferrous sulfate heptahydrate will not result in unreasonable adverse effects to human health and that there is a reasonable certainty that no harm will result to the U.S. population, including infants and children, from aggregate exposure to residues of ferrous sulfate heptahydrate. EPA does not expect dietary (food and drinking water), occupational or non-occupational risks of concern from the use of ferrous sulfate heptahydrate as an active ingredient in pesticide products for non-food use. Data demonstrate that ferrous sulfate heptahydrate is of low toxicity for all routes of exposure. No endpoints have been established for this compound, and it is readily metabolized by humans.

The database of studies required to support the hazard assessment to human health is complete. For more information on the human health hazard assessment of ferrous sulfate heptahydrate, see the supporting documentation provided in the associated regulatory docket (search for "EPA-HQ-OPP-2023-0624" at http://www.regulations.gov).

3.2 Assessment of Ecological Exposure and Risk

To assess ecological risks from use of biochemical pesticides, EPA evaluates the likely environmental impacts as a result of exposure of the chemical to plants and animals in the environment and to whether that exposure will cause harm or ecological effects. EPA uses this combined information and considers the overall toxicity to characterize the risk(s) in order to identify what levels may cause harmful effects on the plants and animals of concern that may occur from use of the substance in the manner described.

To evaluate toxicity, EPA initially requires that a wide range of studies including Tier I testing be done on the following non-target organisms: mammals (acute, sub-chronic, prenatal developmental, and mutagenicity), birds (acute oral and dietary), fish (acute freshwater fish and aquatic invertebrates), plants, and insects. Testing is organized in a tiered structure, where Tier I studies test worst-case exposure scenarios and higher tiers (Tiers II and III) generally encompass definitive risk determinations and longer-term greenhouse or field testing. Higher tier testing is implemented only when unacceptable effects are seen at the Tier I screening level.

The database of studies required to support the hazard assessment to the environment is complete for ferrous sulfate heptahydrate. All nontarget toxicology data requirements for ferrous sulfate heptahydrate have been satisfied per 40 CFR 158.2060. To address these data requirements, the applicant cited toxicity data and information that were previously reviewed and accepted by the Agency for iron salts in 2011 and 2015. The cited toxicity data is from guideline ferrous sulfate heptahydrate studies with birds, fish, and aquatic invertebrates. For non-target insect toxicity data requirements, the applicant cited toxicity data from a study with ferrous sulfate monohydrate, which is structurally similar to ferrous sulfate heptahydrate; and is, therefore, considered a suitable surrogate chemical. Non-target plant toxicity data requirements were addressed through scientific rationales based on minimal exposure. As part of its ecological exposure and risk assessment, EPA also concluded that there was no reasonable expectation for the labeled applications of ferrous sulfate heptahydrate to cause direct or indirect discernible effects to federally listed threatened and endangered ("listed") species or their designated critical habitat. Accordingly, EPA is making a "No Effect" determination under the Endangered Species Act (ESA) for all listed species and designated critical habitat for such species and has concluded that consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service under ESA §7(a)(2) is not required.

For more information on the environmental hazard assessment of ferrous sulfate heptahydrate, please see the supporting documentation provided in the associated regulatory docket (search for "EPA-HQ-OPP-2023-0624" at http://www.regulations.gov).

3.2.1 Terrestrial Animals and Plants

Birds and Mammals

Guideline studies indicate that ferrous sulfate heptahydrate is practically non-toxic to birds (MRIDs 40142201 and 40142201) and minimally toxic to mammals (MRID 51930404). An acute oral toxicity study with rats indicated that ferrous sulfate heptahydrate was only slightly toxic to mammals. In avian acute oral toxicity and avian dietary toxicity studies, exposures to ferrous sulfate heptahydrate were deemed practically non-toxic to birds. Low toxicity notwithstanding, exposure to ferrous sulfate heptahydrate is expected to be minimal because 1) the compound binds readily to soil; 2) the salt dissociates readily when exposed to water; and 3) environmental fate data indicate that iron salts readily breakdown into constituent ions, which are quantitatively indistinguishable in concentration from what occurs relative to natural background levels of iron salts. Finally, as a solid inorganic ionic salt with high-water solubility there is a low probability for tissue penetration as it would either be too structurally incompatible as a solid to penetrate skin tissue or it would be readily dissociated into nontoxic ions upon contact with dermal moisture before any potential dermal penetration. Therefore, risks of concern to nontarget birds and mammals are not anticipated when the product is used in accordance with the labelled use directions.

Nontarget Insects

Ferrous sulfate heptahydrate is considered practically nontoxic to insects, and no significant

exposures for nontarget insects are expected. A guideline study on honeybee acute toxicity (MRID 48578601) demonstrated no toxic effects for ferrous sulfate heptahydrate up to the limit dose, indicating virtual nontoxicity for the uses of this iron salt. With regard to exposure, the product is to be applied directly to moss, and does not involve any broadcast spray applications; thereby minimizing the possibility of any exposures to nontarget insects through spray drift loading in areas adjacent to the use site. Equally important, no significant exposures for nontarget insects are expected for the same reasons discussed in the section above, such as rapid dissociation and non-penetrative physical characteristics as an inorganic solid. Therefore, no effects are anticipated to nontarget insects exposed to the ferrous sulfate heptahydrate.

Nontarget Plants

Although no toxicity data is available for nontarget plants, EPA's risk assessment determines that ferrous sulfate heptahydrate will not affect nontarget plants because no significant exposure is expected. The EP is to be applied directly to moss, so spray drift loading to areas adjacent to the use site is not expected. Moreover, the Agency does not anticipate that runoff loadings will be significant to any degree because the ferrous sulfate heptahydrate is expected to ionize and any resultant iron runoff is expected to be exceedingly low and largely marked by natural iron background. As such, no runoff exposures are expected for nontarget plants. Therefore, no effects are anticipated to nontarget plants exposed to the ferrous sulfate heptahydrate when the product is used in accordance with EPA-approved label use directions.

3.2.2 Aquatic Organisms

Freshwater Fish and Aquatic Invertebrates

Although ferrous sulfate heptahydrate is considered slightly to moderately toxic to aquatic species, including fish and aquatic invertebrates, exposure to these species will not be of concern due to the environmental fate characteristics of ferrous sulfate heptahydrate. Iron, one of the most abundant earth elements, is expected to be immobilized under environmental conditions that are typical of soils in use areas. There is very little likelihood for runoff to aquatic systems since the parent compound will convert very rapidly to less soluble forms (iron oxides and hydroxides) in the environment. Furthermore, oxidized iron compounds bind tightly to soil under turf. Therefore, risks to nontarget aquatic species, including endangered/threatened organisms, are not anticipated when the product is used in accordance with EPA-approved label use directions.

Aquatic Nontarget Plants

Ferrous sulfate heptahydrate is considered slightly to moderately toxic to aquatic species, including aquatic nontarget plants. However, exposure to nontarget will be minimal because there is very little likelihood for runoff to aquatic systems since the parent compound converts very rapidly to less soluble forms (iron oxides and hydroxides) in the environment. Furthermore, oxidized iron compounds bind tightly to soil under turf.

3.2.3 Endangered Species Conclusion

Based on minimal exposure and lack of effects at estimated environmental concentrations, EPA has concluded that effects are not anticipated to birds, mammals, reptiles, amphibians, nontarget plants, nontarget insects (including honeybees), freshwater fish, aquatic invertebrates and aquatic plants from the pesticidal use of ferrous sulfate heptahydrate. The Agency also determined that effects to federally listed threatened and endangered species and their designated critical habitats are not expected from these uses. Therefore, a "No Effect" determination is made for direct and indirect effects to federally listed threatened and endangered species and their designated critical habitats for the uses of ferrous sulfate heptahydrate as labeled.

4. Benefits

Ferrous sulfate heptahydrate is a moss control agent with a low toxicity profile. It is a lower toxicity alternative to conventional moss control agents such as copper and sodium hypochlorite. EPs containing ferrous sulfate heptahydrate can also be used in Integrated Pest Management (IPM) programs as a complement or replacement for the aforementioned conventional moss control agents. Of additional note, ferrous sulfate heptahydrate biodegrades more rapidly than most alternative conventional pesticides for this use, potentially making it a more environmentally protective choice. Altogether, its low toxicity profile and rapid biodegradability in the environment, pesticides containing ferrous sulfate heptahydrate have both environmental and human health benefits relative to many conventional moss control agents, making them a valuable addition to the pesticide tool kit and an attractive alternative to conventional moss control agents.

5. Public Comments

In the Federal Register of February 23, 2023 (88 FR 11433), EPA published a Notice of Receipt (NOR) that announced receipt of a new end-use product application containing the new active ingredient, ferrous sulfate heptahydrate: NO Mas (EPA File Symbol: 7001-TTIL). No comments were received in response to the NOR.

Because the pesticide product contains ferrous sulfate heptahydrate, which is a new active ingredient, EPA opened a 15-day public comment period on June 7, 2024. EPA took this action in accordance with a policy, first implemented in October 2009, designed to provide a more meaningful opportunity for the public to participate in major registration actions. The 15-day public comment period closed on June 22, 2024; and no comments were received as part of that process.

6. Regulatory Decision

The ferrous sulfate heptahydrate database is considered to be complete with regard to the human health and environmental fate and ecological data requirements. In considering the assessed risk to human health and the environment, the Agency concludes that ferrous sulfate heptahydrate meets the regulatory standard under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Therefore, the EPA is granting the unconditional registration of ferrous sulfate heptahydrate as a new active ingredient under Section 3(c)(5) of FIFRA. As part of its assessment, EPA has determined that the uses of ferrous sulfate heptahydrate are not expected to cause direct or indirect discernible effects to federally listed threatened and endangered ("listed") species

or their designated critical habitat. Therefore, EPA is making a "No Effect" determination under the Endangered Species Act (ESA) for all listed species and designated critical habitat for such species.

7. Registration Requirements

The EPA is registering the following product: No Mas (EPA File Symbol: 7001-TTIL) The following statement and directions for use must appear on the EP label:

a) For directions for use on moss: "Use to control moss on turf/lawns, base of trees (trunks) and any area that has moss growing on a surface that staining is not a concern. Avoid any contact with concrete or any building structures as the product will cause permanent staining. Wash off sidewalks, driveways and painted surfaces as active ingredient may stain concrete and other surfaces."

b) For EP with directions for turf directions: "Rake lawn lightly to remove leaves, dead grass and other debris. Mow lawn to expose moss and to allow product to penetrate the turf canopy."

c) For EP with rate directions: "Apply uniformly at the directed rate. Apply 50-75 lbs. per acre. Mix 1 lb. into 2-3 gallons of water. Best results are achieved when applied directly to the moss with a hand spray gun."

8. Supporting Documents

The risk assessments supporting this decision and the draft product label for the EP, No Mas (EPA File Symbol: 7001-TTIL) can be found in the associated regulatory docket (search for "EPA-HQ-OPP-2022-0642" at http://www.regulations.gov).

9. Future Data Requirements

Should the formulation of the end-use product or the application methods described in 'Section 7' of this document change in the future, or if new products are proposed containing ferrous sulfate heptahydrate, additional data may be required, and new risk assessments may need to be performed.