Addendum
to the
Finding of No Significant Impact
Asian Longhorned Beetle Cooperative Eradication Program
in Worcester and Middlesex Counties, Massachusetts
Environmental Assessment
September 2008

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), prepared an environmental assessment (EA) and signed a finding of no significant impact (FONSI) on November 21, 2008, for the eradication of Asian longhorned beetle (ALB) from a recently discovered infested site in Worcester, Massachusetts, and any additional future finds in Worcester and Middlesex Counties, Massachusetts. An addendum to the FONSI was subsequently prepared and signed on September 11, 2009, to clarify that imidacloprid treatments could occur in the fall, as well as the spring. The EA with the November 2008 FONSI attached and the September 2009 Addendum to the FONSI are available online at http://www.aphis.usda.gov/plant_health/ea and from:

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Animal and Plant Health Inspection Service
Plant Protection and Quarantine
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This addendum to the FONSI was prepared due to an anticipated modification to a minor part of the eradication program. When host trees are removed, the program calls for either removal of the stump or herbicide applications to insure that stumps and associated sprouts do not allow for ALB reinfestation.

In the EA, APHIS evaluated the triclopyr formulation, Garlon® 3A, which contains the active ingredient triclopyr triethylamine salt (TEA) for the treatment of stumps of trees that have been removed. APHIS is now also proposing an additional formulation of triclopyr, Pathfinder® II, which contains the active ingredient triclopyr butoxyethyl ester (BEE). This formulation allows more flexibility in being able to treat the bark instead of direct application to fresh-cut areas of the stem. In addition, APHIS is proposing the addition of foliar applications of Garlon® 3A that will be tank mixed with two other herbicides, Arsenal® and Escort® XP, to treat foliage sprouting from stumps of trees removed during the eradication efforts. This use is considered minor compared to the physical removal and treatment of stumps, and would only occur in areas where older stumps have not been removed or treated and have begun to resprout. All herbicide applications will be made by hand either by painting undiluted material on the stump or directly spraying stumps and/or sprouting foliage using a backpack sprayer.

To verify that the proposed changes do not result in additional risk to human health and the environment, APHIS conducted a risk assessment (attached) that carefully considers the proposed changes. The assessment concludes that the use of the Pathfinder® II formulation of

triclopyr and the tank mix of Garlon® 3A, Arsenal®, and Escort® XP pose minimal human health and environmental risks. Applications are directed specifically at stumps or vegetation sprouting from cut stumps using methods that minimize off-site transport of the proposed formulations. The analysis indicates that all products proposed for use in the program demonstrate potential effects only at levels that are orders of magnitude above any potential residue that would result from their proposed use.

Therefore, I have determined that there would be no significant impact on the quality of the human environment from the proposed minor modifications to the ALB eradication program in Massachusetts, namely, the use of an additional formulation of triclopyr and the use of triclopyr in a tank mix.

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3/29/10

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Date

Attachment

Summary Risk Assessment for Herbicides Proposed for Use in the Asian Longhorned Beetle Cooperative Eradication Program

The U.S. Department if Agriculture (USDA)–Animal and Plant Health Inspection Service (APHIS) proposes the use of two triclopyr formulations in the treatment of stumps and their associated sprouts from host trees that have been removed as part of the Asian Longhorned Beetle (ALB) Cooperative Eradication Program. As part of the ALB eradication effort, host trees may be physically removed, along with the stumps, to prevent reinfestation; however, under certain circumstances, physical removal of the stumps may not be possible. Areas where trees have been removed but the stumps cannot be physically destroyed may require herbicide applications to ensure that stumps and associated sprouts do not allow for ALB reinfestation. In a previous environmental assessment (EA), USDA–APHIS evaluated the triclopyr formulation, Garlon®3A, which contains the active ingredient triclopyr triethylamine salt (TEA), for the treatment of stumps of trees that have been removed to eradicate ALB (USDA–APHIS, 2008). USDA–APHIS is now also proposing an additional formulation, Pathfinder® II, which contains the active ingredient triclopyr butoxyethyl ester (BEE). This formulation allows more flexibility in being able to treat the bark instead of direct application to cut areas of the stem. In addition, USDA–APHIS is proposing some foliar applications of Garlon® 3A that will be tank mixed with two other herbicides, Arsenal® and Escort® XP, to treat sprouting foliage from stumps that have been removed as part of the eradication efforts. This use is considered minor compared to the physical removal and treatment of stumps, and would only occur in areas where older stumps have not been removed or treated and have begun to resprout. All applications will be made by hand either by painting undiluted material on the stump or directly spraying stumps and/or sprouting foliage using a backpack sprayer.

The purpose of this risk assessment is to summarize the available response data for each triclopyr formulation, as well as other herbicides that may be used, and discuss the potential for exposure and risk to human health and the environment under the proposed use in the ALB program.

Herbicide Response Data

Garlon® 3A contains the active ingredient, triclopyr triethylamine salt (TEA), which is a pyridine systemic herbicide commonly used for control of woody and broadleaf plants. This formulation can cause significant eye irritation; however, it has low acute inhalation and dermal toxicity. Acute oral median lethal concentrations range from approximately 600 to 1,000 mg/kg suggesting low to moderate toxicity (FS, 2003). Long-term toxicity studies have shown that triclopyr TEA is not a carcinogen or mutagen, and that toxicity in developmental and reproductive studies primarily occurs at high doses and at levels that are also maternally toxic (EPA, 1998). The other proposed triclopyr formulation, Pathfinder® II, can cause slight temporary eye irritation during application, as well as some skin irritation in cases of prolonged exposure. Acute oral median lethal concentrations are 1,000 mg/kg with acute inhalation and dermal toxicity median lethality values greater than the highest test concentration suggesting low acute mammalian toxicity under various exposure pathways. Triclopyr BEE is not considered

carcinogenic or mutagenic and, in cases where developmental and reproductive studies demonstrate effects, doses were at levels considered to be maternally toxic.

The primary degradation product of triclopyr TEA and BEE is triclopyr acid which has also been evaluated and found to have a similar mammalian toxicity profile to the amine and ester. Triclopyr TEA toxicity to terrestrial nontarget organisms is considered low with the exception of terrestrial plants. Toxicity to avian species is low for triclopyr TEA, with oral and dietary median lethal toxicity values greater than 2,000 mg/kg and 10,000 ppm, respectively (FS, 2003; EPA, 2008). Chronic toxicity to birds is also expected to be low with reproductive toxicity no observable effect levels (NOEL) of 100 and 500 ppm for the mallard and bobwhite quail, respectively, when exposed to triclopyr acid (EPA, 1998). Triclopyr TEA is considered practically nontoxic to honey bees based on acute contact studies (EPA, 1998). Triclopyr TEA does exhibit toxicity to terrestrial plants, as expected, based on results from seedling emergence, germination, and vegetative vigor studies. The primary degradation product of triclopyr TEA, triclopyr acid, is similar in toxicity to terrestrial nontarget organisms based on the available toxicity data. Available avian toxicity data for triclopyr BEE demonstrates slight toxicity with median lethal dose values ranging from 735 to 849 mg/kg for the bobwhite quail (EPA, 1998).

TEA toxicity to aquatic organisms is low for fish and aquatic invertebrates. Available acute fish toxicity data demonstrates median lethal concentrations greater than 100 mg/L for Garlon® 3A and technical triclopyr TEA (EPA, 2008; Wan et al., 1987). Triclopyr TEA is considered practically nontoxic to aquatic invertebrates in freshwater and marine environments with toxicity values exceeding 300 mg/L. Chronic toxicity to fish and aquatic invertebrates is also low with chronic toxicity no observable effect concentrations (NOEC) ranging from approximately 80 mg/L to greater than 100 mg/L, depending on the test organism and endpoint. Triclopyr BEE is considered slightly to highly toxic to aquatic invertebrates and fish with median lethal concentrations ranging from approximately 0.36 mg/L to 12.0 mg/L (FS, 2003). The primary metabolite of triclopyr TEA and BEE, triclopyr acid, is considered practically nontoxic to aquatic organisms based on available toxicity data (EPA, 1998, 2010).

For foliar treatments, Garlon® 3A is proposed for use as a tank mix with the active ingredients imazapyr and metsulfuron-methyl. Imazapyr is an imidazolinone herbicide, while metsulfuron-methyl is a sulfonylurea herbicide with both products being a common tank-mix partner with triclopyr in the control of woody vegetation. The toxicity of imazapyr and metsulfuron-methyl is considered low for mammals. The formulation containing metsulfuron-methyl, Escort® XP, is considered practically nontoxic to mammals via inhalation, dermal, and oral exposures. All toxicity values were reported as greater than the highest test concentration. In addition, metsulfuron-methyl is not considered to be carcinogenic, nor has it been shown to be a reproductive, teratogenic, or developmental hazard (FS, 2005). Escort® XP is considered a slight eye irritant but is not considered a skin irritant or sensitizer. The other tank-mix partner, Arsenal®, containing the active ingredient imazapyr, has a similar mammalian toxicity profile to metsulfuron-methyl and is considered practically nontoxic in acute inhalation, dermal, and oral exposures. Imazapyr is not considered to be a carcinogen or mutagen, and is not known to be a reproductive, teratogenic, or developmental hazard (FS, 2004).

The toxicity of imazapyr and metsulfuron-methyl is low to all nontarget organisms with the exception of some aquatic and terrestrial plants. Both products are considered practically

nontoxic to wild mammals, birds, and terrestrial invertebrates based on the available acute and chronic toxicity data (EPA, 2010; FS 2004, 2005). Toxicity to fish and aquatic invertebrates is very low with median lethal acute concentrations typically exceeding 100 mg/L for both chemicals (EPA, 2010; FS, 2004, 2005). Chronic toxicity to fish and aquatic invertebrates is also considered low based on the available NOEC that have been reported from standardized toxicity studies.

Herbicide Exposure and Risk

Exposure to humans and the environment from the triclopyr amine or ester is expected to be minimal based on the environmental fate and use pattern proposed in this program. Triclopyr TEA is considered mobile based on the available information regarding water solubility and soil adsorption, however, it breaks down in soil (~12 days) and water (< 1 hr) to triclopyr acid and, to a lesser extent, triethanolamine. Triclopyr BEE has low water solubility and adsorbs more strongly to soil when compared to the amine. Triclopyr BEE also breaks down quickly to triclopyr acid in soil and water with hydrolysis half-lives of less than 1 day (CDPR, 1997). Triclopyr acid is considered slightly mobile based on soil adsorption values; however, the mobility appears to decrease with time (CDPR, 1997). Half-lives of the acid in water are short, ranging from 0.5 to 2.5 days, while in soil half-lives range from 8 to 18 days (EPA, 1998a). The other minor metabolite, triethanolamine, also has a short half-life in the environment, under most conditions, with soil and water half-lives ranging from 5.6 to 13.7 days in soil, and 14 to 18 days in water under aerobic conditions (EPA, 1998a). The acid can break down to 3,5,6-trichloro-2-pyridinol (TCP) in soil and water; available toxicity data suggests TCP is more toxic to aquatic nontarget organisms than either triclopyr TEA, BEE, or the acid. Although this metabolite is more toxic than the parent, its rate of development is such that environmental concentrations will not reach levels that would pose a risk to nontarget organisms. Triethanolamine is less toxic than the parent or acid to aquatic organisms, based on limited toxicity data. Volatilization is not expected to be a significant exposure pathway due to the low vapor pressure that has been measured for triclopyr TEA, BEE, and the associated acid (CDPR, 1997).

Imazapyr and metsulfuron-methyl, which are proposed for use as a tank mix with Garlon® 3A to treat some foliage from sprouting host plant stumps, will also result in minimal exposure in the environment. Imazapyr is water soluble and does not appear to bind readily to soil, based on soil adsorption coefficient values that range from 30 to 100 (FS, 2004). Imazapyr degradation and dissipation half-lives are variable ranging from approximately 25 days to greater than 300 days. Metsulfuron-methyl half-lives in soil range from 17 to 180 days. Reported soil adsorption and water solubility values suggest that metsulfuron-methyl has some mobility. Off-site transport of these two herbicides; as well as Garlon® 3A, is not expected because the products are being directed by hand specifically to small sprouts originating from the host plant stumps. Material is applied using a large droplet size in a low volume to minimize drift and insure application and uptake directly to the sprouting plants. In addition, this use is minor and will only be used in larger wooded areas where physical removal of the stump is not possible. Based on the proposed use pattern and rate for these products, and their favorable toxicity profile, no significant risk to surface water or groundwater resources is expected.

Significant risk to human health from applications of Garlon® 3A alone or as a tank mix, as well as Pathfinder® II, is not expected based on the available use pattern and mammalian toxicity

data. Exposure will be limited to applicators because treatments are made directly to stumps or sprouting foliage. Adherence to required personal protective equipment and other label directions will minimize exposure and risk to workers, as well as the environment. Risk is not expected to be significantly greater from the proposed foliar applications that may be made using the tank mix of Garlon® 3A with formulations containing the active ingredients imazapyr and metsulfuron-methyl. This use pattern is minor compared to physical removal of the stumps or the treatment of stumps. This application will occur to those stumps that have resprouted in areas where physical removal was not possible or a previous stump treatment with an herbicide did not occur. Exposure to humans is limited to applicators, and adherence to label requirements regarding personal protective equipment of applicators will minimize exposure and risk. The low potential for exposure and favorable mammalian toxicity profile for each active ingredient suggests that significant risk to applicators is not expected.

Exposure to terrestrial and aquatic nontarget organisms is also expected to be minimal from each proposed formulation and tank mix. Significant drift or runoff is not expected because applications are not broadcast applied but are made using either a backpack sprayer to deliver a coarse droplet size or by painting the material on individual stumps and associated sprouting vegetation. The low probability of off-site transport for any of the products is expected to result in very low exposure to nontarget organisms. The low probability of exposure and the favorable available effects data demonstrate that all products have a very low risk of causing adverse ecological risk. Risk to nontarget organisms is greatest for plants because they are the most sensitive group to each application; however, impacts to terrestrial plants is expected to be minimal and will only potentially occur for those plants that are immediately adjacent to treated stumps or sprouts. Impacts to terrestrial plants immediately adjacent to treated stumps will be minimized by following label directions for each herbicide treatment. Significant exposure to aquatic plants is not expected based on the method of application and adherence to label restrictions regarding applications near aquatic areas. Exposure in aquatic systems is not expected to occur at levels that could result in any direct impacts to aquatic plants or at levels that would suggest indirect impacts to aquatic organisms that depend on aquatic plants as a food source or as habitat.

Summary

The selective use of herbicides that are proposed for this program will have minimal human health and environmental risks. Applications are directed specifically at stumps or sprouting vegetation from cut stumps using methods that minimize off-site transport of the proposed formulations. All products proposed for use in the program demonstrate potential effects at levels that are orders of magnitude above any potential residue values that could occur off-site from these types of applications.

References

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