United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:
FWS/AES/DER/BNC/076198
09E30000-2022-I-0002

Jan Matuszko
Director, Environmental Fate and Effects Division
Office of Pesticide Programs
Division Mail Code 7507P
U.S. Environmental Protection Agency
1200 Pennsylvania Ave.
NW Washington, D.C. 20460

Subject: Reinitiation of Consultation on the Environmental Protection Agency's Registration of Sodium Cyanide (M-44) and Sodium Cyanide (insecticide fumigant for citrus)

Dear Ms. Matuszko:

This letter is in response to the Environmental Protection Agency's (EPA's) request for reinitiation of consultation pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA) for the national registration of sodium cyanide; the active ingredient in two approved products, M-44 sodium cyanide capsules and as an insecticide fumigant for the storage of citrus in California. On February 11, 2011, EPA, Office of Pesticide Programs (OPP), requested re-initiation of section 7(a)(2) consultation under 50 CFR Part 402.16 and 402.46. EPA's request seeks to re-initiate consultation on the effects to ESA-listed species and critical habitat from EPA's registration of the active ingredient sodium cyanide under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (hereafter, Action).

The EPA's request for re-initiation of consultation was prompted by: 1) the listing of additional potentially affected species since the Service issued its 1993 Biological Opinion (hereafter, 1993 Opinion) related to sodium cyanide (M-44), 2) the findings in EPA's 2010 Registration Review Problem Formulation for sodium cyanide, 3) earlier EPA reviews, including the 2009 response to a petition to cancel all uses of M-44 and the 1994 Registration Eligibility Decision (RED), and 4) EPA's desire to develop with the Service, more focused mitigation for those species identified in the 1993 Opinion. Since the completion of the Services' 1993 Opinion, several species of birds and mammals have been added to the list of threatened and endangered species, new critical habitats have been designated, and additional species and critical habitat have been proposed for listing, each of which are addressed in this reinitiation. In addition, EPA's reinitiation request

includes consideration of listed reptile species and their designated and proposed critical habitats. Finally, label restrictions that were originally issued by EPA have been revised, as described in the description of the Action below.

The use of sodium cyanide as an insecticide (fumigant for storage of citrus) is limited to California as a Special Local Needs registration. Sodium cyanide is used as a source of hydrogen cyanide gas for quarantine fumigation of surface pests on post-harvest citrus within storage or processing facilities. Use of this product outside of storage or processing facilities is not permitted. Since sodium cyanide use as a fumigant is only used indoors, chemical exposure to ESA listed species, or resources they depend on (e.g., habitats, forage base) is not expected. Additionally, chemical exposure to physical and biological features of critical habitat (e.g., food availability, high quality habitat, absence of pollutants or toxicants) from this use is not expected. EPA stated in their 2019 Revised Interim Registration Review Decision, that there are no ecological risks expected from the citrus fumigation use for ESA listed species and designated critical habitats.

On December 21, 2021, after changes were subsequently made to EPA's action in the form of label changes containing additional restrictions, EPA made determinations of "may affect, not likely to adversely affect" for 21 listed species of birds, mammals, and reptiles and nine designated critical habitats (Table 1) that may be affected by use of sodium cyanide in M-44 devices. For these species and critical habitats, the determinations were based on conclusions of discountable effects (i.e., effects that are extremely unlikely to occur) that were supported by assumptions and analyses detailed in materials provided by EPA. EPA also made "no effect" determinations for amphibians, arachnids, clams (mussels), crustaceans, fishes, insects, plants, snails, and some birds, mammals, and reptiles, as described in their memo and December 21, 2021, email to the Service

Table 1. Endangered and threatened species addressed in this Letter of Concurrence for the registration of sodium cyanide in the form of sodium cyanide capsules for M-44 devices. NLAA = Not Likely to Adversely Affect.

Entity ID	Scientific Name	Common Name	Status	Taxa Group	EPA Species Determination	EPA Critical Habitat Determination
4064	*Centrocercus minimus*	Gunnison sage-grouse	Threatened	Birds	NLAA	NLAA
126	*Falco femoralis septentrionalis*	Northern aplomado falcon	Endangered	Birds	NLAA	Critical Habitat not designated
67	*Grus americana*	Whooping crane	Endangered	Birds	NLAA	NLAA

Entity ID	Scientific Name	Common Name	Status	Taxa Group	EPA Species Determination	EPA Critical Habitat Determination
66	*Gymnogyps californianus*	California condor	Endangered	Birds	NLAA	NLAA
91	*Numenius borealis*	Eskimo curlew	Endangered	Birds	NLAA	Critical Habitat not designated
129	*Strix occidentalis lucida*	Mexican spotted owl	Threatened	Birds	NLAA	NLAA
9	*Antilocapra Americana sonoriensis*	Sonoran pronghorn	Endangered	Mammals	NLAA	Critical Habitat not designated
13	*Canis lupus baileyi*	Mexican wolf	Endangered	Mammals	NLAA	Critical Habitat not designated
20	*Cynomys parvidens*	Utah prairie dog	Threatened	Mammals	NLAA	Critical Habitat not designated
42	*Glaucomys sabrinus coloratus*	Carolina northern flying squirrel	Endangered	Mammals	NLAA	Critical Habitat not designated
22	*Herpailurus (=Felis) yagouaroundi cacomitli*	Gulf Coast jaguarundi	Endangered	Mammals	NLAA	Critical Habitat not designated
30	*Leopardus (=Felis) pardalis*	Ocelot	Endangered	Mammals	NLAA	Critical Habitat not designated
24	*Lynx Canadensis*	Canada lynx	Threatened	Mammals	NLAA	NLAA
5	*Mustela nigripes*	Black-footed ferret	Endangered	Mammals	NLAA	Critical Habitat not designated
18	*Panthera onca*	Jaguar	Endangered	Mammals	NLAA	NLAA

Entity ID	Scientific Name	Common Name	Status	Taxa Group	EPA Species Determination	EPA Critical Habitat Determination
33	*Rangifer tarandus caribou*	Woodland caribou	Endangered	Mammals	NLAA	NLAA
43	*Tamiasciurus hudsonicus grahamensis*	Mt. Graham red squirrel	Endangered	Mammals	NLAA	NLAA
59	*Urocitellus brunneus*	Northern Idaho ground squirrel	Threatened	Mammals	NLAA	Critical Habitat not designated
2	*Ursus arctos horribilis*	Grizzly bear	Threatened	Mammals	NLAA	Critical Habitat not designated
185	*Gopherus agassizii*	Desert tortoise	Threatened	Reptiles	NLAA	NLAA

This re-initiated consultation is based upon the Service's review of the EPA's: 1991 biological evaluation, 1994 Reregistration Eligibility Decision (RED), 2010 Registration Review Problem Formulation, 2011 letter to reinitiate consultation of pesticide products containing the active ingredient sodium cyanide (M-44 sodium cyanide capsules and sodium cyanide as a fumigant for the storage of citrus), 2019 Sodium Cyanide Interim Registration Review Decision and 2019 Revised Interim Registration Review Decision for M-44; recent discussions between the Service, EPA and the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (APHIS WS), and an updated list of species, determinations, and rationales provided by EPA in December 2021, as shown below.

Consultation History

The following is an overview of the registration of sodium cyanide and the consultation process highlighting the coordination and collaboration since our 1993 Opinion. (All literature cited is included as an attachment to this document.)

Date	Event
April 15, 1991	EPA initiated consultation for 16 vertebrate control agents including sodium cyanide in M-44 spring-loaded ejectors.
March 1993	The Service issued a Biological Opinion in March 1993 (1993 Opinion) that determined the registration of sodium cyanide, was likely to jeopardize the continued existence of the Florida panther,

	gray wolf, grizzly bear, jaguarundi, Louisiana black bear, ocelot, San Joaquin kit fox and California condor.
1994	In 1994, EPA issued a Reregistration Eligibility Decision (RED) pertaining to the use of sodium cyanide capsules in M-44 units. EPA concluded that the reregistration of M-44 did not pose unreasonable risks to humans or the environment if this product was used in accordance with the 26 use restrictions (EPA, 1994).
January 24, 2007	Ten non-governmental organizations (Sinapu, Public Employees for Environmental Responsibility, Beyond Pesticides, Forest Guardians, Predator Defense, Western Wildlife Conservancy, Sierra Club, The Rewilding Institute, Animal Defense League of Arizona, and Animal Welfare Institute) petitioned EPA to cancel all registered uses of M-44 sodium cyanide capsules (Sinapu et al., 2007). The request for cancellation was based on purported unreasonable adverse effects on the environment, misuse, inability of the registrant to secure the pesticide from unauthorized use, and harm to threatened and endangered species.
November 16, 2007	EPA requested comment from interested persons on the January 24, 2007, Petition in the *Federal Register*. The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Wildlife Services (APHIS WS), the registrant for the sodium cyanide products at issue in the Petition, submitted comments, as did a number of states, industry trade groups, concerned citizens, various non-governmental organizations, congressional representatives, and foreign governments.
February 11, 2011	In a letter to the Service, EPA requested reinitiation of consultation on the active ingredient sodium cyanide which includes two pesticide products; M-44 sodium cyanide capsules and sodium cyanide as a fumigant for the storage of citrus.
August 2017	WildEarth Guardians and the Center for Biological Diversity (and co-petitioners) filed a petition requesting the cancellation of registrations of M-44 cyanide capsules (sodium cyanide), EPA Registration Nos. 56228-15, 35978-1, 39508-1, 13808-8, and CA840006. In summary, the petition requested that EPA, 1) cancel all active and pending registrations for sodium cyanide pursuant to FIFRA, 2) suspend all sodium cyanide registrations pending completion of cancellation proceedings, 3) invoke a stop order prohibiting all current and future use of sodium cyanide effective immediately, and 4) initiate special review proceedings for all sodium cyanide registrations pursuant to 40 CFR Part 154. EPA determined that the petition did not contain substantial new information demonstrating a need for review outside of the

	registration review process. The petition was subsequently denied, and a copy of the response letter was added to the public docket for sodium cyanide on November 20, 2018. More information about the petition can also be found in the *Sodium Cyanide Interim Registration Review Decision,* also in the docket (EPA, 2019a).
February 28, 2018	Pursuant to a settlement agreement in Center for Biological Diversity v. Zinke, No. 9:17-cv-00044-DLC (2018), the Service must complete consultation on the EPA's re-registration of the active ingredient sodium cyanide under FIFRA by no later than December 31, 2021.
August 6, 2019	On August 6, 2019, EPA released a *Sodium Cyanide Interim Registration Review Decision* (EPA, 2019b), which they later withdrew on August 15, 2019. EPA subsequently renewed discussions with APHIS WS to further mitigate potential exposure to M-44 devices (EPA, 2019a).
December 4, 2019	EPA issued a Registration Decision for M-44 in December 2019 (EPA, 2019b) that increased buffers to protect humans and domestic animals, as well as an updated use restriction for threatened and endangered species.
January 1, 2020	Oregon Senate Bill 580, which prohibits the use of M-44 and similar devices statewide, went into effect.
March 3, 2020	Pursuant to a court-ordered settlement agreement in *Western Watersheds Project v. Grimm,* No. 1:16-cv-218-BLW (D. Idaho 2020), USDA Wildlife Services agrees not to use M-44s in Idaho until it completes an EIS for its predator damage management activities in Idaho.
May 14, 2020	Wildlife Services Directive - M-44 Use and Restrictions, established guidelines for the use of M-44 devices by Wildlife Services personnel (USDA, 2020).
December 2, 2020	EPA met with the Service to discuss reinitiation of consultation and provide background information on the registration of sodium cyanide (M-44 and citrus fumigant in California).
January 25, 2021	EPA and the Service met to discuss further considerations related to the species list for sodium cyanide (M-44). The agencies continued to coordinate on the extent of anticipated use areas, species lists, and other issues addressed by this consultation.
February 23, 2021	EPA confirmed with APHIS WS that they voluntarily canceled the sodium cyanide registration for arctic fox (56228-32) in December 2019.

February 25, 2021	EPA requested technical assistance on potentially affected birds, mammals, and reptile species and their designated critical habitats for their reinitiation of consultation.
April to December 2021	The EPA, USDA WS, and the Service collaborated to clarify and strengthen ESA listed species protection language on M-44 labels. EPA's proposed new label language requires applicators to obtain a species list from the Service's Information, Planning and Consultation (IPaC) website no more than three months prior to deployment of M-44s. In addition, applicators must ensure that no endangered or threatened species, those that can trigger the device or can scavenge on the carcasses impacted by the device, are exposed to sodium cyanide.
December 8, 2021	The Service provided an updated species and critical habitat list to EPA, which included all taxa in the 15 states where M-44 use is allowed.
December 21, 2021	EPA provided the Service additional information via email and an attachment (Internal Memorandum between EPA, Environmental Risk Branch, Environmental Fate and Effects Division to EPA, Risk Management and Implementation Branch, Pesticide Re-evaluation Division), providing adopted label changes for M-44 devices (described below), an updated species list, revised determinations for species and critical habitats (including a "no effect" or "not likely to adversely affect" finding for each listed species and a "not likely to adversely affect" determination for designated critical habitats), and rationales for consideration in our concurrence letter.

Description of the Proposed Action

The proposed Action is the registration of sodium cyanide. Under FIFRA, EPA has the sole responsibility of registering pesticides and approving pesticide labels for use in the U.S. and its territories. Before a pesticide product may be sold or distributed in the U.S., it must be exempted or registered with a label identifying approved uses by EPA's Office of Pesticide Programs. Once registered, a pesticide may not legally be used unless the use is consistent with directions on its approved label(s). The EPA's authorization of pesticide labels are categorized as either FIFRA section 3 (new product registrations), section 18 (emergency use), or 24(c) Special Local Needs (SLN). FIFRA requires these chemicals to be reregistered every 15 years according to the Section 3 and Section 24(c) registration. Thus, the Service considers the duration of the Action to be 15 years.

Products containing sodium cyanide are currently registered as restricted use pesticides. EPA currently authorizes the use of sodium cyanide in the form of a predacide, via sodium cyanide capsules for use in M-44 devices, and in the form of an insecticide. The use of sodium cyanide as an insecticide (fumigant for storage of citrus) is limited to California as a Special Local Needs

registration. As discussed previously, since EPA determined that there are no ecological risks expected from the citrus fumigation use, we will not discuss this use further in this document.

As a predacide, sodium cyanide is manufactured as an encapsulated single-dose product, which is inserted into an M-44 spring loaded ejector device. Use of this product is only allowed on pastures, rangeland and forest land by trained and certified applicators under the direct supervision of a government agency (EPA 1994, EPA 2019a). These devices are used to control canid predators such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Vulpes cinereoargenteu*s), and wild dogs (*Canis lupus familiaris*) which are: (1) suspected of preying upon livestock and poultry; (2) suspected of preying upon threatened or endangered species; or (3) are vectors of a communicable disease. The ejector device is treated with a scent or bait used to attract predators. When an animal tugs at it, a spring-driven plunger ejects the sodium cyanide capsule into its mouth. Sodium cyanide causes death by inhibiting enzyme reactions in mammals that prevent oxygen flow to the blood.

Current registrations for sodium cyanide, used in M-44 devices, include a national registration held by APHIS WS and five individual state registrations (Montana, New Mexico, South Dakota, Texas, and Wyoming). APHIS WS use under the national label is restricted to 14 states (Arizona, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Texas, Utah, Virginia, West Virginia and Wyoming); the only states which have granted USDA APHIS such authority by their state pesticide regulators. In Arizona, state pesticide regulators prohibited use of sodium cyanide (M-44) by APHIS on public lands, and according to APHIS WS, use on private lands within the State of Arizona has not occurred in the last five fiscal years. Additionally, as a result of a 2020 court-ordered settlement agreement in the U.S. District Court of Idaho, , USDA WS agreed not to use M-44s in the State of Idaho until an EIS is completed on its predator damage activities in Idaho. We anticipate use of sodium cyanide (M-44s) in Idaho will resume once the settlement requirements are met, and therefore, our analysis includes species and critical habitat which occur in Idaho.

Both national and state registrations correspond to product labels that specify application information and any required restrictions associated with use of the product. As noted previously, M-44 is a restricted use pesticide, and its use is only allowed by trained and certified applicators under the direct supervision of their oversight agencies, APHIS WS, or by the State Departments of Agriculture. For State registrations in Montana, New Mexico, South Dakota and Texas, certified applicators include State Department of Agriculture staff or individuals in which the State Department of Agriculture assumes a supervisory and/or monitoring role with respect to use of the M-44 product. While Wyoming Department of Agriculture has its own registered label, applicators in the state are supervised by APHIS WS.

The EPA, USDA WS, and the Service collaborated to clarify and strengthen ESA listed species protection language on M-44 labels. The new label language is provided below (Use Restriction #9) and will replace the existing language on all current labels. Although APHIS WS' label applies to the entire United States and territories, it is only relevant to the 14 states where M-44's use is currently allowed by those states and in the five states that currently have their own registered product, as described above. If other states choose to allow the use of M-44s under APHIS WS' national label, these restrictions would also apply to those states.

Use Restrictions (Related to Federally threatened and endangered species)

9. The M-44 devices must only be used in areas where either 1) Federally endangered or threatened species under the Endangered Species Act ("endangered or threatened species") are not expected to be exposed to the devices or the pesticide contained in the devices, or 2) where site- and/or species-specific measures have been prepared by or in coordination with the U.S. Fish and Wildlife Service ("Service") that will avoid endangered or threatened species' exposure to such devices or the pesticide contained in them. At the time of application, each applicator must have in their possession a list of threatened and endangered species ("species list"), not more than 3 months old, from the Service that may be present within the area in which M-44 devices are to be deployed. Species lists and Service points of contact are available through the Information, Planning and Consultation (IPaC) website (https://ecos.fws.gov/ipac/). To procure an official species list, the geographic area in which M-44 devices are to be deployed must be entered into IPaC. Each applicator must ensure that one of the following conditions are met: 1) there are no endangered or threatened species shown on the species list for the area in which M-44 devices are to be deployed that can trigger the device or can scavenge on carcasses impacted by the device; or 2) if endangered and threatened species capable of triggering the device or scavenging on carcasses impacted by the device are shown on the species list, the applicator must also have in their possession written documentation of any appropriate site- and/or species-specific measures that avoid exposure and are prepared by or developed in coordination with the Service.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the Action, and not merely the immediate area involved in the Action (50 CFR 402.02). Consistent with the ESA Section 7 implementing regulations, in delineating the action area for sodium cyanide, we evaluated the physical, chemical, and biotic effects of the Action on the environment that would not occur but for the action and are reasonably certain to occur. For the reasons mentioned below, the action area for this consultation, as delineated by these effects to the environment, consists of 15 states (AZ, CO, ID, MT, NE, NV, NM, ND, OK, SD, TX, UT, VA, WV, and WY) where M-44s are currently authorized for use.

Use Restriction #9 prohibits the use of M-44 where either 1) listed endangered or threatened species are expected to be exposed to the devices or the pesticide contained in the devices, or 2) site- and/or species-specific avoidance measures have been prepared by or in coordination with the Service.

Exposure pathways

Potential pathways of exposure, those that are anticipated if an animal is exposed to an M-44 device, are ingestion of sodium cyanide when an animal triggers the device, or in rare cases, where an animal preys or scavenges on another animal that has recently triggered the device. While we do not anticipate exposure to listed species due to new label restrictions, we do discuss what could occur if exposure did occur.

Use of M-44 devices generally leads to direct exposure of certain terrestrial vertebrate wildlife that encounter and trigger the device, thereby directly exposing them to sodium cyanide. Bait used on the capsule holders may attract a variety of mammalian and avian species. If an animal is attracted to the bait, it may try to pick up or pull the baited capsule holder (as evidenced in certain wildlife incident reports (see EPA 2018 DRA; Appendix A and B). When the animal pulls on the M-44 device, it triggers the spring which launches the sodium cyanide into the animal's mouth or face (Blom and Connolly 2003). About four pounds of pressure is needed to activate the device, which would exclude certain mammalian and avian species that are not large enough to exert a sufficient degree of pressure.

Larger mammals, such as (wolves (*Canis lupus*), coyotes (*Canis laterans*), black bears (*Ursus americanus*), and bobcats, (*Lynx rufus*)) have been killed based on actual field observations and incident reports (see EPA 2018 DRA; Appendix A and B). Unintended wolf mortalities have occurred in the past; some of which were due to misuse of the M-44 product (three incidences) and some which occurred under a registered use (12 incidences) (see EPA 2018 DRA; Appendix A and B). Thirteen of these wolf mortalities occurred prior to 2010, while two occurred in 2017 (one misuse, one registered use). Recent protocols put in place by APHIS WS, prior to this reinitiation of consultation, have dramatically decreased wolf mortalities since 2010. With new label language (i.e., M-44 devices may not be used within the range of listed species unless, site- or species-specific conservation measures have been prepared by or in coordination with the Service that will avoid ESA-listed species' exposure to such devices or the pesticide contained in them), we don't anticipate any wolf mortalities in the future.

Medium-sized mammals and birds such as racoons and the common raven have been able to set off the devices (as indicated by incident data, see EPA 2018 DRA; Appendix A and B). Some non-target mammals may possess adequate strength to set off the devices by pulling on them, while other non-target animals may be exposed by rubbing or pecking at the capsule holder with their noses, mouths or beaks, thereby setting off the devices.

Scavengers or predators attracted to dead or dying animals that have triggered the device may also be exposed to the chemical for a brief time after the device is triggered through exposure to hydrogen cyanide within the consumed tissues. Animal scavengers could eat an animal poisoned with sodium cyanide; however, cyanide metabolism (and excretion) reduces hydrogen cyanide levels in tissue (Towill et al. 1978, Bhandari et al. 2014; as cited in USDA 2019) and hydrogen cyanide does not concentrate in one location in the body (Gettler and Baine 1938, Ansell and Lewis 1970, ATSDR 2006, Bhandari et al. 2014; as cited in USDA 2019).In one study, the half-life of cyanide in the rat (*Rattus* sp.), was between 1,200 and 1,510 minutes (Bhandari et al. 2014; as cited in USDA 2019). In rabbits (Laporidae family), the half-life of cyanide was 177 minutes and in swine was 26.9 minutes (Bhandari et al. 2014; as cited in USDA 2019)), which is more comparable to the size of target predators. Thus, due to quick breakdown of hydrogen cyanide within dead or dying animals, it would be extremely unlikely that a scavenger (e.g., listed species) consuming the carcass would be exposed to any significant levels of hydrogen cyanide. Furthermore, applicators are required to check the baited locations on a weekly basis and remove any carcasses found. This measure further reduces the likelihood of exposure to listed species. In light of the fact that scavengers would not be expected to consume lethal amounts of the pesticide, as well as new label language that includes restrictions on use in areas

where listed species capable of triggering the M-44 devices are located, we anticipate that exposure of listed species individuals from these pathways is extremely unlikely to occur.

While other pathways of exposure (e.g., accidental spills, releases into the environment) may be possible, we anticipate such pathways to be extremely unlikely. As EPA stated in their 1994 RED, if used as directed by the label, significant environmental exposure to sodium cyanide when used as an encapsulated product for use in M-44 ejector devices is not anticipated. Should an accidental spill of sodium cyanide from the capsules occur in the field, several processes would contribute to the dissipation of sodium cyanide. Hydrogen cyanide, which is extremely toxic, is formed by reaction of sodium cyanide with moisture and is the primary reaction that occurs when an M-44 device is triggered and sodium cyanide reacts with moisture in the predator's mouth. Lethality results from the predator receiving this highly concentrated dose directly in its mouth. In contrast, when hydrogen cyanide is released into the environment, the gas diffuses and dilutes quickly and away from the source location, making it non-lethal. In soil, cyanide present at low concentrations would biodegrade under aerobic conditions with the initial formation of ammonia, which would be converted to nitrite and nitrate in the presence of nitrifying bacteria (USDHHS 2006). Under anaerobic conditions, the cyanides ion will denitrify to gaseous nitrogen (Richards and Shieh 1989; as cited in USDHHS 2006). Sodium cyanide is soluble in soil moisture and dissociates to free cyanide (hydrogen cyanide) (Eisler 1991, Dzombak et al., 2006; as cited in USDA 2019). Hydrogen cyanide seldom remains in soils because it complexes with trace metals, adsorbs to organic carbon content, or volatizes (Towill et al. 1978, Castric 1981, Kjeldsen 1998, Dzombak et al. 2006, NIH 2015; as cited in USDA2019). Groundwater contamination by cyanide from M-44 ejectors is not anticipated due to the quick break down of sodium cyanide in soils. Exposure to plants (e.g., which may provide forage base for listed species) and their pollinators is not anticipated given the use pattern of M-44 devices and the environmental fate of the product.

Additionally, due to the use areas of M-44s and nature of application of sodium cyanide in encapsulated devices, the potential exposure to aquatic systems is not anticipated. Label language instructs that devices not be placed within 200 feet of a water body (ditches and water troughs are not included). Thus, we do not anticipate ESA listed aquatic species or other terrestrial species that use these areas (e.g., wetlands, streams, ponds) would be exposed to sodium cyanide while they are in these areas.

We do not anticipate that designated critical habitats in Table 1 would be adversely affected by the proposed Action. While the proposed Action may introduce very small amounts of sodium cyanide into the ecosystem and species' critical habitat (e.g., accidental spillage), the environmental fate of sodium cyanide in the environment would lead to a quick dissociation and dilution of cyanide in the environment. Therefore, we do not anticipate measurable reductions in the relevant physical and biological features of the species critical habitat, specifically the quantity or quality of the forage base of these species, nor do we anticipate measurable reductions in habitat quality. Thus, we expect any effects to critical habitat features to these species to be insignificant.

Summary

The EPA identified two primary exposure routes and thus potential effects to ESA listed species and their designated critical habitats; (1) direct triggering of the M-44 device and subsequent death to the species, and (2) consumption of recently killed species that have residues of sodium cyanide or lethal derivatives in which species preying on the carcass is poisoned and killed. With the inclusion of new label language, ESA listed species susceptible to the chemical would unlikely be exposed to the chemical; since, 1) use of sodium cyanide is prohibited where these species occur, or 2) site- and/or species-specific measures will have been prepared by or in coordination with the Service that will avoid ESA-listed species' exposure to such devices or the pesticide contained in them.

While sodium cyanide is used as an insecticide in California as a post-harvest fumigant within storage or processing facilities for citrus, as discussed previously, we do not expect chemical exposure to listed or proposed species or designated or proposed critical habitats.

Based on the new label language, the EPA determined that the proposed action (i.e., the re-registration of sodium cyanide) may affect, but is not likely to adversely affect the 21 ESA-listed species and nine designated critical habitats (Table 1) where the product is currently used. The restrictions on the label would also apply to any additional states where sodium cyanide is approved for use in the future. The Service concurs with the EPA's determination of "may affect, not likely to adversely affect" for the 21 listed species and nine critical habitats identified by EPA. Any effects to these ESA-listed species would be discountable as the species that could be adversely affected are unlikely to encounter M-44 devices or contaminated carcasses based on the new label language. The new label language clearly states that M-44 devices may not be used within the range of listed species unless, site- or species-specific conservation measures have been prepared by or in coordination with the Service that will avoid ESA-listed species' exposure to such devices or the pesticide contained in them. Large predators, such as wolves, have been unintentionally taken in the past (primarily before 2010). Prior to the adoption of new label language (Use Restriction #9, as described above), APHIS WS has taken proactive measures in recent years to minimize incidental take of wolves and other large non-target predators. With the addition of new label language, especially language that requires coordination with local Service field offices, we do not anticipate the take of wolves or other listed species. Adverse effects to designated critical habitat are not anticipated, as we do not anticipate measurable reductions in the relevant physical and biological features of the species critical habitat, specifically the quantity or quality of the forage base of these species, nor do we anticipate measurable reductions in habitat quality. Given the language of Use Restriction #9, which applies to all listed animals and critical habitats, we also anticipate the use of M-44 would be unlikely to adversely affect any listed species or critical habitat designated in the future.

This concludes informal consultation. As stated at 50 CFR §402.16(a), reinitiation of consultation is required and shall be requested by the action agency (EPA) or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) if new information reveals effects of the action that may affect listed or proposed species or final or proposed critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that

causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action. If you have any questions about this concurrence, please contact Keith Paul, Branch of National Consultations (703-358-2675 or keith_paul@fws.gov), or Karen Myers, Chief, Branch of National Consultations (703-358-2353 or karen_myers@fws.gov).

Sincerely,

CRAIG AUBREY

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Craig Aubrey
Chief, Division of Environmental Review
Ecological Services

Cc:
Tracy Perry (EPA)
Brian Anderson (EPA)
Nicole Zinn (EPA)

Attachment

Attachment: Literature Cited

Blom, F. S., and G. Connolly. 2003. Inventing and reinventing sodium cyanide ejectors: a technical history of coyote getters and M-44s in predator damage control. USDA-APHIS-WS-National Wildlife Research Center Research Report 03–02. National Wildlife Research Center, Fort Collins, Colarado, USA.

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