

DEPARTMENT OF INTERIOR**Fish and Wildlife Service****50 CFR Part 20****RIN 1018-AE09****Migratory Bird Hunting; Temporary Approval of Tungsten-Iron Shot as Nontoxic for the 1997-98 Season****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Proposed rule and notice of availability.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to temporarily approve tungsten-iron shot as nontoxic for the 1997-98 migratory bird hunting season. The toxicological report which is an extensive literature search and analysis of tungsten and tungsten-iron, suggests that these compounds are nontoxic under assumed use and in the environment. Analysis of the toxicity study reveal no adverse effects over a 30-day period when dosing mallards with 8 BB size tungsten-iron shot.

DATES: Comments on the proposed rule or draft Environmental Assessment (EA) (see caption **NEPA CONSIDERATION**) must be received no later than April 1, 1997.

ADDRESSES: Copies of the EA are available by writing to the Chief, Office of Migratory Bird Management (MBMO), U.S. Fish and Wildlife Service, 1849 C Street, NW., room 634—ARLSQ, Washington, DC 20240. Comments may also be forwarded to this same address. The public may inspect comments during normal business hours in room 634, Arlington Square Building, 4401 N. Fairfax Drive, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Paul R. Schmidt, Chief, or Cyndi Perry, Wildlife Biologist, Office of Migratory Bird Management (MBMO), (703) 358-1714.

SUPPLEMENTARY INFORMATION: Since the mid-1970s, the Service has sought to identify shot that, when spent, does not pose a significant toxic hazard to migratory birds and other wildlife. Currently, only steel shot is approved by the Service as nontoxic. Bismuth-tin which was given temporary approval for hunting seasons 1993-94, 1994-95, and 1995-96, may be approved in early 1997. The Service believes approval for other suitable candidate shot materials as nontoxic is feasible. Compliance with the use of nontoxic shot is increasing over the last few years. The Service believes that this level of compliance will continue to increase with the availability and approval of other

nontoxic shot types. The Service is eager to consider these other materials for approval as nontoxic shot.

Federal Cartridge Company's (Anoka, MN) candidate shot is made from sintering tungsten and iron, which together forms a two phase alloy. Shot made from this material has a density of approximately 10.3 gm/cc or 94 percent of the density of lead. The shot will contain nominally 55 percent tungsten and 45 percent iron, by weight. The pellet will have sufficient iron to attract a magnet.

Federal's application includes a description of the new tungsten-iron shot, a toxicological report, and results of a 30-day dosing study to assess the toxicity of this shot in game-farm mallards. The toxicological report incorporates toxicity information (a synopsis of acute and chronic toxicity data for birds, acute effects on mammals, potential for environmental concern, toxicity to aquatic and terrestrial invertebrates, amphibians and reptiles), and information on environmental fate and transport (shot alteration, environmental half-life, and environmental concentration). The toxicity study is a 30-day dosing test to determine if the candidate shot poses any deleterious effects to game farm mallards. This meets the requirements of Test 1, 50 CFR § 20.134(c)(2).

Toxicity Information: There is considerable difference in the toxicity of soluble and insoluble compounds of tungsten and iron. Elemental tungsten and iron are virtually insoluble and, therefore, are expected to be nontoxic. After completion of the literature review, there appears to be no known basis for concern of toxicity to wildlife for the candidate shot material (metallic tungsten and iron) via ingestion by fish, birds, or mammals (Bursian et al. 1996; Gigiena 1983; Patty 1981; Industrial Medicine 1946; Karantassis 1924).

Environmental Fate and Transport: Tungsten is insoluble in water and, therefore, not mobile in hypergenic environments. Tungsten is very stable with acids and does not easily complex. Preferential uptake by plants in acid soil suggest uptake of tungsten in the anionic form associated with tungsten minerals rather than elemental tungsten (Kabata-Peddis 1984).

Environmental Concentration: Calculation of the environmental concentration (EEC) for a terrestrial ecosystem is on 69,000 shot per hectare (Pain 1990), assuming complete erosion of material in 5 cm of soil. The EEC for tungsten in soil is 32.9 mg/kg for a shot composition of 62.9% tungsten-iron alloy, 11.87% tungsten, and 25.31% iron. Adverse effects on biota are not

expected to occur for shot components, given the Hazard Quotients (HQs).

Environmental Concentration: Calculation of the environmental concentration (EEC) for an aquatic ecosystem assumes complete erosion of the shot in one cubic foot of water. The EEC in water for tungsten was 10.5 mg/L for a shot composition of 62.9% tungsten-iron alloy, 11.87% tungsten, and 25.31% iron. Given these HQs, adverse effects on biota are not expected to occur for shot components.

An extensive literature search and review provides information on the toxicity of elemental tungsten to waterfowl and other birds. In Ringelman et al. (1993) effects of ingested tungsten-bismuth-tin shot on captive mallards saw no acute toxicity. Orally dosing twenty eight-week old game farm mallards with 12 to 17 pellets (1.03g) TBT and monitoring for 32 days for evidence of intoxication saw no effect. No birds died during the trial. Gross lesions were not observed during the postmortem examination. Histopathological examination did not reveal any evidence of toxicity or tissue damage. Tungsten was not detectable in kidney or liver samples. The authors conclusion is that TBT shot presents virtually no potential for acute intoxication in mallards.

A study by Kraabel et al. (1996) assess the effects of embedded tungsten-bismuth-tin shot on mallards. The authors conclusion was that TBT is not acutely toxic when implanted in mallard muscle tissue. Inflammatory reactions to TBT shot were localized, and had no detectable systemic effects on mallard health.

Nell (1981) fed laying hens 0.4 or 1g/kg tungsten in a commercial mash for five months to assess the reproductive performance. Weekly egg production was normal and hatchability of fertile eggs was not affected.

Large doses of tungsten given to chickens either through injection or by feeding saw an increase in tissue concentration of tungsten and a decreased tissue concentration of molybdenum (Nell 1981). The loss rate of tungsten from the liver occurred in an exponential manner with a half-life of 27 hours. The alterations in molybdenum metabolism seem to identify with tungsten and not of molybdenum deficiency. Death due to tungsten occurred when tissue concentrations were increased to 25µg/g liver. At this concentration, the activity of xanthine dehydrogenase was zero.

In Federal's 30-day dosing study eight male and 8 female adult mallards given 8 #4 steel shot, 8 #4 lead shot or 8 BB's

of tungsten-iron were observed over a 30-day period. An additional 8 males and 8 females were given no shot. All tungsten-iron birds survived the test with a slight increase in body weight. There were no changes in hematocrit, hemoglobin concentration, and ALAD activity, as well as 25 plasma chemistry parameters. Five of the 16 tungsten-iron birds had a mild hepatocellular biliary stasis, but the authors felt this was not remarkable. No other histopathological lesions were found. In general, no adverse effects were seen when mallards were given 8 BB size tungsten-iron shot and monitored over a 30-day period. Fifty percent of the lead-dose birds (5 males and 3 females) died during the 30-day test while there were no mortalities in the other groups. Lead-dose birds were the only ones to display green excreta, lethargy, and ataxia. Alteration of body weights is not significant in any of the treatments, although lead-dose birds which died during the trial lost an average of 30% of their body weight. Hematocrit, hemoglobin concentrations and ALAD activity were significantly depressed at day 15 in the lead-dose females, while lead-dose males had significantly depressed hematocrit and hemoglobin concentration in comparison to the other three groups. There were no significant differences in these whole-blood parameters at day 30.

As a result of the toxicological report and toxicity test the Service concludes at this time that the available information indicates that tungsten-iron shot, nominally 40–55 percent tungsten and 60–45 percent iron, by weight with <1 percent residual lead, does not impose significant danger to migratory birds and other wildlife and their habitats.

The first condition of approval is the concurrent running of an adverse condition reproductive/chronic toxicity test on game farm mallards as outlined in 50 CFR 20.134 (c)(2) (Tests 2 and 3) and in consultation with the Service's Office of Migratory Bird Management and the U.S. Geological Survey's (USGS) Division of Biological Resources (BRD). This study includes assessment of reproduction, fertility rates, and egg hatchability (egg weight, shell thickness, and content analysis). The test requires the applicant to demonstrate that tungsten-iron shot is nontoxic to waterfowl and their offspring.

The second condition of approval is testing for residual lead levels. The Service will consider any tungsten-iron shot manufactured with lead levels equal to or exceeding 1 percent toxic and, therefore, illegal. In August 18, 1995, Federal Register (60 FR 43314),

the Service indicated it would establish a maximum level for residual lead. The Service, in consultation with the USGS—BRD, determined the maximum environmentally acceptable level of lead in any nontoxic shot is trace amounts or <1 percent and will incorporate this requirement into any final rule that may be promulgated (61 FR 42492).

The third condition of approval involves enforcement. In the August 18, 1995, Federal Register (60 FR 43314), the Service indicated that final unconditional approval of any nontoxic shot would be contingent upon the development and availability of a noninvasive field testing device. Several noninvasive field testing devices are under development to separate tungsten-iron shot from lead shot. Furthermore, tungsten-iron shot can be drawn to a magnet as a simple field detection method.

This proposed rule would amend 50 CFR 20.21(j) by temporarily approving tungsten-iron shot as nontoxic for the 1997–98 migratory bird hunting season. It is based on the original request made to the Service by Federal Cartridge Company on August 20, 1996, the toxicological report, and acute toxicity study. Results of the toxicological report and 30-day toxicity test undertaken for Federal Cartridge Company document the apparent absence of any deleterious effects of tungsten-iron shot when ingested by captive-reared mallards or to the ecosystem.

References

- Barr Engineering Company. 1996. Toxicology Report on New Shot. Contract Report 2302118/40970-1/CET. 21 pp.
- Bursian, S.J., M.E. Kelly, R.J. Aulerich, D.C. Powell, and S. Fitzgerald. 1996. Thirty-Day Dosing Test to Assess the Toxicity of Tungsten-Iron Shot in Game-Farm Mallards. 1996. Report to Federal Cartridge Co. 77 pp.
- Gigiema I Sanitariya. 1983. Mezhdunarodnaya Kniga. Moscow, USSR. 48(7):77.
- Grandy, J.W., L.N. Locke and G.E. Bagley. 1968. Relative toxicity of lead and five proposed substitute shot types to pen-reared mallards. J.Wildl. Manage. 32(3):483–488.
- Interagency Ecosystem Management Task Force. 1995. The Ecosystem Approach: Healthy Ecosystems and Sustainable Economics. Volume II—Implementation Issues.
- Kabata-Pendias, A. and H. Pendias. 1984. Trace elements in soil and plants. CRC Press, Inc. Boca Raton, FL.
- Karantassis, T. 1924. On the toxicity of compounds of tungsten and molybdenum. Ann. Med. 28:1541–1543.
- Kraabel, F.W., M.W. Miller, D.M. Getzy, and J.K. Ringelman. 1996. Effects of embedded tungsten-bismuth-tin shot and steel shot on mallards. J. Wildl. Dis. 38(1):1–8.
- Pain, D.J. 1990. Lead shot ingestion by waterbirds in the Carmarque, France: an investigation of levels and interspecific difference. Environ. Pollut. 66:273–285.
- Patty's Industrial Hygiene and Toxicology. 1981. Wiley Interscience. Wiley & Sons, Inc. NY, NY. Third Ed.
- Ringelman, J.K., M.W. Miller and W.F. Andelt. 1992. Effects of ingested tungsten-bismuth-tin shot on mallards. CO Div. Wildl., Fort Collins, 24 pp.

NEPA Consideration

In compliance with the requirements of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(C)), and the Council on Environmental Quality's regulation for implementing NEPA (40 CFR 1500–1508), the Service prepared a draft Environmental Assessment (EA) in December, 1996. This EA is available to the public at the location indicated under the ADDRESSES caption. Based on review and evaluation of the information in the EA, the Service will determine whether amending 50 CFR 20.21(j) to provide temporary approval of tungsten-iron shot as nontoxic for the 1997–98 migratory bird hunting season would be a major Federal action that would significantly affect the quality of the human environment.

Endangered Species Act Considerations

Section 7 of the Endangered Species Act (ESA) of 1972, as amended (16 U.S.C. 1531 *et seq.*), provides that Federal agencies shall “insure that any action authorized, funded or carried out ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of (critical) habitat ...” The Service has initiated a Section 7 consultation under the ESA for this proposed rule. The result of the Service's consultation under Section 7 of the ESA will be available to the public at the location indicated under the ADDRESSES caption.

Regulatory Flexibility Act, Executive Order 12866, and the Paperwork Reduction Act

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 *et seq.*) requires the preparation of flexibility analyses for rules that will have a significant effect on a substantial number of small

entities, which includes small businesses, organizations or governmental jurisdictions. The Service determined this rule will have no effect on small entities since the approved shot merely will supplement nontoxic shot already in commerce and available throughout the retail and wholesale distribution systems. The Service anticipates no dislocation or other local effects, with regard to hunters and others. This rule was not subject to Office of Management and Budget (OMB) review under Executive Order 12866. The Service has examined this regulation under the Paperwork Reduction Act of 1995 and found it to contain no information collection requirements.

Unfunded Mandates Reform

The Service has determined and certifies pursuant to the Unfunded Mandates Act, 2 U.S.C. 1502 *et seq.*, that this rulemaking will not impose a cost of \$100 million or more in any given year on local or State government or private entities.

Civil Justice Reform—Executive Order 12988

The Service, in promulgating this rule, determines that these regulations meet the applicable standards provided in Sections 3(a) and 3(b)(2) of Executive Order 12988.

Authorship: The primary author of this proposed rule is Cynthia M. Perry, Office of Migratory Bird Management.

List of Subjects in 50 CFR Part 20

Exports, Hunting, Imports, Reporting and recordkeeping requirements, Transportation, Wildlife.

Accordingly, Part 20, Subchapter B, Chapter 1 of Title 50 of the Code of Federal Regulations is proposed to be amended as follows:

PART 20—[AMENDED]

1. The authority citation for Part 20 continues to read as follows:

AUTHORITY: 16 U.S.C. 703–711; 16 U.S.C. 712 and 16 U.S.C. 742 a–j.

2. Section 20.21 is amended by revising paragraph (j) introductory text

and adding paragraph (j)(2) to read as follows:

§20.21 Hunting methods.

* * * * *

(j) While possessing shot (either in shotshells or as loose shot for muzzleloading) other than steel shot, or bismuth-tin (97 parts bismuth: 3 parts tin with <1 percent residual lead) shot, or tungsten-iron ([nominally] 40 parts tungsten: 60 parts iron with <1 percent residual lead) shot or such shot approved as nontoxic by the Director pursuant to procedures set forth in 20.134, provided that:

(1) * * *

(2) Tungsten-iron shot (nominally 40 parts tungsten: 60 parts iron with <1 percent residual lead) is legal as nontoxic shot for the 1997–98 migratory bird hunting season.

Dated: January 24, 1997.

George T. Frampton,

Assistant Secretary for Fish and Wildlife and Parks.

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