

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 20

RIN 1018-AE35

**Migratory Bird Hunting; Extension of Temporary Approval of Tungsten-Iron Shot as Nontoxic for the 1998-99 Season**

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

**SUMMARY:** The U.S. Fish and Wildlife Service (Service) amends Section 20.21(j) to grant temporary approval of tungsten-iron shot as nontoxic for the 1998-99 migratory bird hunting season, except in the Yukon-Kuskokwim (Y-K) Delta region, Alaska. The Service had previously granted temporary approval of tungsten-iron shot as nontoxic for the 1997-98 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 (*Anas platyrhynchos*) with 8 BB size tungsten-iron shot.

**DATES:** This rule takes effect on October 7, 1998.

**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. 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:** Robert J. Blohm, Acting Chief, Office of Migratory Bird Management, U.S. Fish and Wildlife Service, (703) 358-1838.

**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. The Service established procedures and requirements for approval of shot and shot coatings as nontoxic in 1986 and published them in 50 CFR 20.134. The Service adopted new procedures in December 1997. These are published at 50 CFR 20.134. Currently, only steel shot and bismuth-tin shot are approved by the Service as nontoxic shot. The Service granted temporary approval of bismuth-tin as nontoxic on two separate actions for the hunting seasons of 1994-

95 and 1995-96. Tungsten-iron shot was given temporary approval for the 1997-98 migratory bird hunting season (62 FR 43444 published August 18, 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.

Federal Cartridge Company's (Anoka, Minnesota) 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 g/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 (*Anas platyrhynchos*). 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 Tier 1 and Tier 2, 50 CFR 20.134(b)(2) and (b)(3)(B).

**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). However, there is some concern that the absorption of tungsten into the femur, kidney, and liver could potentially affect certain endangered or threatened species such as the spectacled eider (*Somateria fischeri*) on the Y-K Delta,

Alaska. Until a reproductive/chronic toxicity test has been completed and the Service has reviewed the results, tungsten-iron shot will not be approved for the Y-K Delta.

**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 suggests 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 percent tungsten-iron alloy, 11.87 percent tungsten, and 25.31 percent 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 percent tungsten-iron alloy, 11.87 percent tungsten, and 25.31 percent 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 (TBT) shot on captive mallards saw no acute toxicity. Orally dosing 20 8-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 author's conclusion is that TBT shot presents virtually no potential for acute intoxication in mallards.

A study by Kraabel et al. (1996) assesses 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 1 g/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 (*Gallus domesticus*) 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 25 mg/g liver. At this concentration, the activity of xanthine dehydrogenase was zero.

In Federal's 30-day dosing study 8 male and 8 female adult mallards given 8 No. 4 steel shot, 8 No. 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-dosed birds (5 males and 3 females) died during the 30-day test while there were no mortalities in the other groups. Lead-dosed 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-dosed birds which died during the trial lost an average of 30 percent of their body weight. Hematocrit, hemoglobin concentrations, and aminolevulinic acid dehydratase (an enzyme important to hemoglobin synthesis) activity were significantly depressed at day 15 in the lead-dosed females, while lead-dosed 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, but that reproductive/chronic toxicity data is lacking.

Lacking sufficient reproductive/chronic toxicity data on the candidate shot, the applicant was advised to conduct additional testing as described in Tier 2 and Tier 3 as outlined in 50 CFR 20.134(b)(3) and (4), and in consultation with the Service's Office of Migratory Bird Management and the U.S. Geological Survey's Division of Biological Resources (BRD). One test 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 Service's maximum environmentally acceptable level of residual lead in shot is trace amounts of <1 percent (50 CFR 20.134(b)(5)). The Service will consider any tungsten-iron shot manufactured with lead levels equal to or exceeding 1 percent as toxic and, therefore, illegal. At this time, the tungsten-iron shot meets the acceptable specifications.

Before approval of any shot for use in migratory game bird hunting, a noninvasive field testing device must be available for enforcement officers to determine the shot material in a given shell in the field (50 CFR 20.134(b)(6)). Several noninvasive field testing devices are under development to separate tungsten-iron shot from lead shot. Tungsten-iron shot can be drawn to a magnet as a simple field detection method.

In summary, this rule amends 50 CFR 20.21(j) by extending temporary approval of tungsten-iron shot as nontoxic for the 1998–99 migratory bird hunting season, except in the Y–K Delta region, Alaska. 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 reviewed by the Service in its initial decision to grant temporary approval for the 1997–98 season (62 FR 43444), and comments received on the July 27, 1998 proposed rule (63 FR 40077). 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. However, there is some concern that the absorption of tungsten into the femur, kidney, and liver could potentially affect the spectacled eider (*Somateria fischeri*), a species already subject to adverse weather, predation, and lead poisoning on the Y–K Delta. Until a reproductive/chronic toxicity test has been completed and the Service has reviewed the results, tungsten-iron shot will not be conditionally approved for the Y–K Delta region. Information since the Service's initial decision last year has not changed or been supplemented to date. A reproductive/chronic toxicity test will be completed and the Service will review the results, prior to any final unconditional approval of tungsten-iron shot for migratory bird hunting.

#### Public Comments and Responses

The July 27, 1998 proposed rule published in the **Federal Register** (63 FR 40077) invited public comments from interested parties. The closing date for receipt of all comments was August 26, 1998. During this 30-day comment period, the Service received one comment.

The Wisconsin Department of Natural Resources (Wisconsin) supported the proposal to grant temporary approval of tungsten-iron as nontoxic shot. Wisconsin was concerned, however, with the timing of the proposed and final rules. Because of the lateness of the Service's proposed rule, relative to the establishing and beginning of the migratory bird hunting seasons, Wisconsin was not able to include information on the status of tungsten-iron shot in their annual hunting regulations pamphlet that went to press in late August. Wisconsin uses the pamphlet to inform their hunters as to the availability of different nontoxic shot materials and stated that because of the timing of the final rule they would not be able to adequately inform their hunters. Wisconsin encouraged that any subsequent rules on nontoxic shot be initiated earlier in the year so that any final rules would be published before August 1.

**Service Response:** The Service realizes the information dissemination problems caused by conditionally approving tungsten-iron shot at this time. However, we believe that the public benefits of conditionally approving the shot outweigh any potential timing issues and/or problems. We believe that it is in the best interest of the hunting public to provide them an additional legal option for hunting waterfowl and coots for the 1998–99

season and it is in the best interest of small retailers who have stocked tungsten-iron shot for the coming season. Additionally, we believe that another nontoxic shot option likely will improve hunter compliance, thereby reducing the amount of lead shot in the environment.

#### Effective Date

Under the APA (5 U.S.C. 553 (d)) the Service waives the 30-day period before the rule becomes effective and finds that "good cause" exists, within the terms of 5 U.S.C. 553(d)(3) of the APA, and this rule will, therefore, take effect immediately upon publication. This rule relieves a restriction and, in addition, it is not in the public interest to delay the effective date of this rule. During the two prior public comment periods for conditional approval the Service received six comments. Of these comment letters, three were from individuals, two from industry companies, and one from a State natural resource agency. As we indicated in our August 13, 1997 final rule, individuals expressed support for the temporary approval of tungsten-iron shot stating that they " \* \* \* would love the opportunity to try the new shot" and believed that " \* \* \*. any nontoxic alternative that approaches the effectiveness of lead should be explored." All other objections have been remedied satisfactorily and were discussed in either the August 13, 1997 final rule or under the Public Comment and Responses section of this document. It is in the best interest of migratory birds and their habitats to extend the conditional approval on tungsten-iron shot as nontoxic for the 1998-99 migratory bird hunting season. It is in the best interest of the hunting public to provide them an additional legal option for hunting waterfowl and coots for the 1998-99 season, which began on September 1, 1998. It is in the best interest of small retailers who have stocked tungsten-iron shot for the coming season. The Service believes another nontoxic shot option likely will improve hunter compliance, thereby reducing the amount of lead shot in the environment.

#### References

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- Kraabel, F. W., M. W. Miller, D. M. Getzy, and J. K. Ringleman. 1996. Effects of embedded tungsten-bismuth-tin shot and steel shot on mallards. J. Wildl. Dis. 38(1):1-8.
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- Patty's Industrial Hygiene and Toxicology. 1981. Wiley Interscience. Wiley & Sons, Inc. NY, NY. Third Ed.
- Ringleman, 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.
- 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 completed a Section 7 consultation under the ESA for this rule and determined that granting temporary approval of tungsten-iron shot for the 1998-99 hunting season, except on the Yukon-Kuskokwin (Y-K) Delta, is not likely to affect any threatened, endangered, proposed or candidate species. The result of the Service's consultation under Section 7 of the ESA is available to the public at the location indicated under the ADDRESSES caption.

#### Regulatory Flexibility 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 economic impacts of annual hunting on small business entities were analyzed in detail and a Small Entity Flexibility Analysis (Analysis), under the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*), was issued by the Service in 1998 (copies available upon request from the Office of Migratory Bird Management). The Analysis documented the significant beneficial economic effect on a substantial number of small entities. The primary source of information about hunter expenditures for migratory game bird hunting is the National Hunting and Fishing Survey, which is conducted at 5-year intervals. The Analysis utilized the 1996 National Hunting and Fishing Survey which it was estimated that migratory bird hunters would spend between \$429 and \$1084 million nationwide at small businesses in 1998. The approval of tungsten-iron as an alternative shot to steel and bismuth-tin will have a minor positive impact on small businesses by allowing them to sell a third nontoxic shot to the hunting public. However, the overall effect to hunting expenditures in general would be minor. Therefore, 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.

#### 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 May, 1998 and a Final EA in September 1998. 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 has determined that amending 50 CFR 20.21(j) to extend temporary approval of tungsten-iron shot as nontoxic for the 1998-99 migratory bird hunting season would not 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

### Executive Order 12866, and the Paperwork Reduction Act

This rule was not subject to Office of Management and Budget (OMB) review under Executive Order 12866.

E.O. 12866 requires each agency to write regulations that are easy to understand. The Service invites comments on how to make this rule easier to understand, including answers to questions such as the following: (1) Are the requirements in the rule clearly stated? (2) Does the rule contain technical language or jargon that interferes with its clarity? (3) Does the format of the rule (grouping and order of sections, use of headings, paragraphing, etc.) aid or reduce its clarity? (4) Would the rule be easier to understand if it were divided into more (but shorter) sections? (5) Is the description of the rule in the SUPPLEMENTARY INFORMATION section of the preamble helpful in understanding the rule? What else could the Service do to make the rule easier to understand?

Send a copy of any comments that concern how this rule could be made easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C Street, N.W., Washington, D.C. 20240. Comments may also be e-mailed to: [Exsec@ios.doi.gov](mailto:Exsec@ios.doi.gov).

### Congressional Review

In accordance with Section 251 of the Small Business Regulatory Enforcement Fairness Act of 1996 (5 U.S.C. 8), this rule has been submitted to Congress. Because this rule deals with the Service's migratory bird hunting program, this rule qualifies for an exemption under 5 U.S.C. 808(1); therefore, the Department determines that this rule shall take effect immediately.

### Paperwork Reduction Act

The Service has examined this regulation under the Paperwork Reduction Act of 1995 and found it to contain no information collection

requirements. However, the Service does have OMB approval (1018-0067; expires 06/30/2000) for information collection relating to what manufacturers of shot are required to provide the Service for the nontoxic shot approval process. For further information see 50 CFR 20.134.

### 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.

### Takings Implication Assessment

In accordance with Executive Order 12630, these rules, authorized by the Migratory Bird Treaty Act, do not have significant takings implications and do not affect any constitutionally protected property rights. These rules will not result in the physical occupancy of property, the physical invasion of property, or the regulatory taking of any property. In fact, these rules allow hunters to exercise privileges that would be otherwise unavailable; and, therefore, reduce restrictions on the use of private and public property.

### Federalism Effects

Due to the migratory nature of certain species of birds, the Federal government has been given responsibility over these species by the Migratory Bird Treaty Act. These rules do not have a substantial direct effect on fiscal capacity, change the roles or responsibilities of Federal or State governments, or intrude on State policy or administration. Therefore, in accordance with Executive Order 12612,

these regulations do not have significant federalism effects and do not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

### Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951) and 512 DM 2, we have evaluated possible effects on Federally recognized Indian tribes and have determined that there are no effects.

### List of Subjects in 50 CFR Part 20

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

Accordingly, for reasons set out in the preamble, title 50, Chapter 1, subchapter B, part 20 of the Code of Federal Regulations is amended as follows:

### PART 20—[AMENDED]

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

**Authority:** 16 U.S.C. 703-712; and 16 U.S.C. 742a-j.

2. Amend Section 20.21 by revising paragraph (j)(2) to read as follows:

#### § 20.21 Hunting methods.

\* \* \* \* \*

(j) \* \* \*

(2) Tungsten-iron shot (nominally 40 parts tungsten: 60 parts iron with <1 percent residual lead) is legal as nontoxic shot for the 1998-99 migratory bird hunting season, except in the Yukon-Kuskokwim (Y-K) Delta region, Alaska.

Dated: October 1, 1998.

**Donald Barry,**

*Assistant Secretary for Fish and Wildlife and Parks.*

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