Department
for Environment
Food & Rural Affairs

Restriction decision: lead in ammunition

by Emma Hardy MP Parliamentary Under Secretary of State

On behalf of the Secretary of State for Environment, Food and Rural Affairs

Decision date: 27 June 2025

Preliminary matters

- Article 69(1) of assimilated Regulation (EC) No. 1907/2006 concerning the registration, evaluation, authorisation and restriction of chemicals ('UK REACH') provides that if an appropriate authority considers that the manufacture, placing on the market or use of a substance on its own, in a mixture or in an article poses a risk to human health or the environment that is not adequately controlled and needs to be addressed, it shall ask the Health and Safety Executive ('the Agency') to prepare a dossier which conforms to the requirements of Annex 15 of UK REACH.
- In accordance with this provision, on 21 April 2021, the Defra Secretary of State, with agreement from Welsh and Scottish Ministers, made a request to the Agency to prepare a dossier on the use of lead in ammunition. The request stated that the use of lead in ammunition raises concerns to both human health and the environment. It raised a particular concern regarding harm of lead ammunition to wildfowl and raised the potential adverse effect of consumption of meat killed with lead ammunition on human health, particularly children. Military and non-civilian uses were excluded from the scope of this request.
- The Agency's dossier was published on 6 May 2022 ('the Restriction Dossier'). In the Restriction Dossier, the Agency provided justification that action is necessary beyond any measures already in place, and that a restriction is the most appropriate measure to address the risks identified.
- The Agency formulated an opinion on risk assessment and on socio-economic analysis on the restrictions suggested in accordance with the requirements in UK REACH, and submitted its Final Opinion to the Defra Secretary of State, Welsh Ministers and Scottish Ministers on 10 December 2024 ('the Final Opinion').
- The Final Opinion concludes that a restriction under UK REACH is appropriate to reduce the risk to human health and the environment from lead in ammunition, and sets out the related socio-economic impact, including in relation to the availability of alternatives.

- The Secretary of State is now required to take a decision, subject to the consent requirements in Article 4A of UK REACH, on whether to propose a draft amendment to Annex 17.

Purpose of this decision report

1. Under Article 68(1) of UK REACH, when there is an unacceptable risk to human health or the environment arising from the manufacture, use or placing on the market of substances, Annex 17 of UK REACH shall be amended by regulations made by the Secretary of State which provide for the adoption of new restrictions, or the amendment of current restrictions, for the manufacture, use or placing on the market of substances on their own, in mixtures or in articles.
2. In exercising this power, the Secretary of State must take into account the socio-economic impact of the restriction, including the availability of alternatives.
3. Under Article 73(1) of UK REACH, if the conditions laid down in Article 68 are fulfilled, the Secretary of State must propose a draft amendment to Annex 17 of UK REACH.
4. The functions of deciding whether to propose a draft amendment, and of proposing a draft amendment, are subject to the consent requirement in Article 4A of UK REACH.
5. This report sets out the decision and reasons for that decision, as required under Article 130 of UK REACH. In accordance with Article 73(1), this report also sets out a detailed explanation of the reasons for divergence from the Agency's original proposal.

Decision background

6. Lead is a toxic element. It is internationally accepted that the effects of lead on human health include toxicity to the nervous system, kidneys, cardiovascular system, liver and immune system. Lead is also toxic to reproduction in humans, due to its adverse effects on fertility and the development of the unborn child. The critical effect in the developing foetus and young children is developmental neurotoxicity; even at low levels of lead exposure, cognitive development and intelligence quotient (IQ) are reduced. Children absorb lead more than adults. No safe concentration levels of lead exist, lead always has a negative effect on human health.
7. In Great Britain (GB), each nation has already enacted a ban on the use of lead shot over wetlands to protect wildfowl in response to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA, 1999). Regulations1 have been in place for over 20 years, but compliance levels are low.
8. The UK is also a contracting party to the United Nations Environment Programme (UNEP) Convention on Migratory Species of Wild Animals (CMS). The Conference of

[1] The Environmental Protection (Restriction on Use of Lead Shot) (England) Regulations 1999, The Environmental Protection (Restriction on Use of Lead Shot) (Wales) Regulations 2002 and The Environmental Protection (Restriction on Use of Lead Shot) (Scotland) (No.2) Regulations 2004

the Parties to CMS adopted the Guidelines to Prevent the Risk of Poisoning to Migratory Birds through Resolution 11.15 (Rev.COP13) Feb 2020, which includes the recommendation to form a taskforce on the “Phase-out the use of lead ammunition” across all habitats (wetland and terrestrial).

9. The Agency estimates in the Restriction Dossier that, if the current releases of lead from shooting in GB continue, approximately 139 000 tonnes of lead will be released into the environment over the next 20 years. Over this period, this will place at least: (i) 1 million wild birds at risk of poisoning through ingestion of spent lead gunshot in the environment and (ii) around 40,000 birds-of-prey at risk of poisoning through ingestion of lead (bullets and shot) via the consumption of carrion. A far greater number of birds will experience sub- lethal and welfare effects. In addition, the Agency estimates there are 4,000-48,000 at-risk children aged 7 or younger who are exposed to significant levels of lead from eating game meat shot with lead ammunition.

10. Further details regarding the contextual evidence on lead in ammunition can be found in the Agency’s Final Opinion.

Lead shot

The Agency have highlighted the following in their Final Opinion:

11. Lead shot used for target shooting presents risks not adequately controlled from primary and secondary poisoning of birds, soil contamination, secondary poisoning to livestock and wildlife on shooting ranges/areas used as agricultural land, poisoning of livestock (ruminants) via silage grown on shooting ranges/areas and surface or groundwater contamination. Target shooting with lead shot is estimated to release 5,360 tonnes of lead into the environment per year.

12. Lead shot used for live quarry shooting presents risks not adequately controlled to both human health and the environment. The risk to human health is mainly to vulnerable groups (pregnant women and young children) eating meat killed with lead shot. The environmental risks are the primary and secondary poisoning of birds, soil contamination, secondary poisoning to livestock (ruminants) via silage grown in areas of high lead shot use, scavenging wildlife and companion animals, and surface or groundwater contamination. Live quarry shooting with lead shot is estimated to release 1,601 tonnes of lead into the environment per year.

13. The Agency considers that a restriction on the placing on the market and use is the only realistic way to: (i) limit the amount of lead entering the environment; and (ii) eliminate the risk to humans from ingestion of shot-derived lead in game meat when lead shot is used for live quarry shooting. For outdoor target shooting, the most effective risk management option is prohibition on the placing on the market and use of lead shot.

14. Alternatives to lead shot, such as steel shot, are available on the GB market and some shooters already use lead-free ammunition. For live quarry shooting, the alternatives also meet the accuracy and lethality required to provide a humane death for the quarry animals.

15. A concentration limit of 1% w/w lead for non-lead shotgun ammunition matches the current concentration limit in the existing regulations on the use of lead shot over wetlands. Manufacturers of ammunition are already familiar with this regulation, and it is achievable.
16. The socio-economic situation for live quarry shooting has been evaluated including the costs to shooters and manufacturers and also the benefits of bird poisoning and chronic kidney disease avoided. The analysis shows that the benefits outweigh the costs, supporting a restriction. A similar analysis for target shooting supports a restriction.
17. The use of lead shot is required for international competitions in some outdoor shooting disciplines, such as the Olympic and Paralympic Games. About 50 elite athletes train at this level and their usage patterns indicate that a restriction on lead shot with a derogation for elite athletes will allow 99.3% of current lead emissions to be removed. Due to this context, to avoid the unquantified cost of the loss of competitive British shooting, where competitions still require lead shot, the Agency considered a derogation proportionate as set out in their socio-economic analysis.
18. The current difficulties with compliance associated with the partial ban on lead shot over wetlands are noted. The Agency suggest that a full restriction covering placing on the market and use for both live quarry shooting and target shooting would facilitate enforcement as it could be done at the point of sale.

Lead bullets

The Agency have highlighted the following in their Final Opinion:

19. Target shooting with lead bullets at outdoor ranges presents a risk not adequately controlled to the environment (to soil and to water contamination, to mammals and wildlife, and also to livestock where the shooting range is on agricultural land). Outdoor target shooting with lead bullets is estimated to release 112 tonnes of lead into the environment per year.
20. Industry-recognised risk management systems to manage the lead risk to humans are already available at many outdoor shooting ranges which, if properly implemented, would minimise the environmental risks to acceptable levels. The majority of outdoor shooting ranges adhere to the industry guidance (about 93%).
21. A restriction on the use of lead bullets for outdoor target shooting with a derogation for all ranges with appropriate risk management measures is considered to be a proportionate intervention to address the risk which is enforceable. A 2-year transition period is proposed.
22. The majority of outdoor shooting ranges will be able to fulfil the conditions for the derogation and the use of lead bullets would then be able to continue at these ranges.

23. The Agency has estimated that the cost-effectiveness ratio for this target shooting restriction with derogation for outdoor shooting ranges with risk management measures is similar to the cost-effectiveness ratio for the restriction on lead shot.

24. Live quarry shooting with lead bullets presents a risk not adequately controlled to human health via the consumption of game meat by vulnerable populations (pregnant women and children) and a risk not adequately controlled to the environment via secondary poisoning of wildlife and of birds.

25. Different types of bullets are used for live quarry shooting and target shooting. Expanding bullets are used for live quarry shooting and non-expanding bullets are used for target shooting. The 0.22 calibre is an exception where the same bullet type is used for both hunting and target shooting.

26. The use of lead bullets for live quarry shooting is estimated to release an estimated 3 tonnes of lead into the environment per year. As bullets intended for live quarry shooting are designed to fragment on impact, a multitude of fine, easily digestible particles is created. The risk of secondary poisoning of birds and animals (i.e. poisoning through the food chain) is therefore higher for the consumption of bird/animal remains containing bullet fragments than for similar remains containing lead shot.

27. In the Agency's Restriction Dossier, the presence of a risk not adequately controlled from bullets used for live quarry shooting (both large (≥6.17 mm in diameter) and small (<6.17 mm in diameter) calibres) was identified but a restriction on live quarry shooting bullets could not – at that point – be recommended.

28. During the Agency's public consultation several issues were resolved, including:

    a. Strong evidence emerged that shooters would not use bullets intended for target shooting ranges for live quarry shooting as shooters overwhelmingly regard this as inhumane or illegal.

    b. Live quarry shooting requires a certain amount of 'zeroing'[2] and practise with targets prior to actual hunting. This is required for the accurate shooting to provide a humane death. Evidence was found that this can be catered for at safe sites e.g. the location of a live quarry shoot. For non-lead large calibre bullets the Agency found that this is already current practice.

29. The most effective risk management option is a prohibition on the placing on the market and use of lead bullets for live quarry shooting.

30. Bullets are generally either centrefire or rimfire. Rimfire are used at the smaller calibres.

[2] Zeroing is the process by which a firearms sights are aligned such that a given distance the point of aim and the point of the bullets impact are the same.

31. The Agency laid out, as evidenced by a European Chemicals Agency (ECHA) review of multiple studies, that the suitability of non-lead centre fire bullets 0.22 calibre and larger for live quarry shooting is well established.

32. For rimfire bullets, generally used for 0.22 calibre and smaller, there are no noise-free (i.e. subsonic), non-lead alternatives which are currently technically viable for live quarry shooting (as small non-lead bullets might impose animal suffering, as they do not provide a clean kill).

33. In England and Wales, non-lead alternatives are available in the (6.17mm) 0.243 calibre which can be legally used to kill deer. A recent change has been made to The Deer (Firearms etc.) (Scotland) Order 1985 regarding the weight requirement on bullets used to kill deer. As a result, ballistically acceptable, non-lead 0.243 bullets are now available which are also legal for deer killing in Scotland.

34. The socio-economic impacts for both large and small calibres have been considered. Analysis by the Agency including the health benefits supports a restriction for large calibre bullets. The socio-economic impact of restricting small calibre bullets could not be fully determined as the costs of worse performing alternatives and costs to manufacturers could not be monetised.

35. For the reasons outlined above, the Agency determined in their Final Opinion that it is now possible to create a large calibre bullet restriction for live quarry shooting with a threshold at 6.17mm (i.e. including the 0.243 calibre). Small calibre bullets are not included in the restriction. Limited amounts of target shooting with small calibre bullets for the purposes of 'zeroing' a rifle prior to live quarry shooting is also not restricted.

36. A concentration limit of up to 3% w/w lead for non-lead bullet ammunition is proposed to allow alternatives already on the market to continue, in particular copper and copper alloy bullets.

37. In their public consultation, the Agency investigated the transition time that would be needed for humane killing at close range for sick or injured animals by for example knackermen, vets or farmers. Several groups of professionals such as knackermen and vets are permitted by the police to hold large calibre handguns such as the 0.308 calibre specifically for humane killing.

38. The Agency recommend a transition period for the marketing and use of large calibre bullets for live quarry shooting of 3 years.

Lead airgun ammunition

The Agency have highlighted in their Final Opinion that:

39. For both live quarry shooting and target shooting with airgun ammunition, a risk to the environment is identified that is not adequately controlled. The environmental risks not adequately controlled from live quarry shooting are primary and secondary poisoning of birds, secondary poisoning to scavenging wildlife and companion animals. The environmental risks not adequately controlled from target shooting are primary and

secondary poisoning of birds, soil contamination, scavenging wildlife and companion animals, and surface or groundwater contamination.

40. The use of lead airgun pellets for live quarry shooting and outdoor target shooting are estimated to result in releases of 1 tonnes and 12 tonnes respectively per year of lead into the environment.

41. The indoor use of airgun ammunition accounts for approximately 80% of the total use in GB. The outdoor uses of airguns often take place outside of formal ranges, for example on private land or back gardens.

42. Lower powered airguns can be held without the requirement for firearms licenses and airgun ammunition is subject to much less control than shot or bullets. Airgun ammunition is therefore available from a much wider range of suppliers (including online retailers).

43. Airgun ammunition does not have the same degree of differentiation between uses as, for example, bullets. Furthermore, use of some non-lead alternatives in airguns may result in exceedance of the legislative muzzle energy threshold - which would then mean a Firearms Certificate would be required. Such effects could result in widespread, unintended criminal offences being committed, if airguns were brought within scope of the proposed restriction on lead in ammunition. The Agency does not consider any restriction options to be monitorable or enforceable.

Exemptions

44. The Agency recommended a number of exemptions as detailed in the Final Opinion.

Conclusion

45. Taking into account the Restriction Dossier, the Final Opinion, the socio-economic impact and the availability of alternatives to lead ammunition, I consider that there is an unacceptable risk to the environment and human health resulting from the use of lead shot and lead bullets, and that the risk needs to be addressed by a restriction. It is therefore appropriate to introduce a restriction on lead shot and bullets and, as a result, I am proposing a draft amendment to Annex 17.

46. The restriction covers the placing on the market and use of lead shot containing lead in a concentration equal to or greater than 1% by weight and will apply after a 3 year transition period.

47. A transition time of 5 years was proposed by the Agency mainly to allow domestic manufacturing industry sufficient time to transition to the manufacture of non-lead alternatives. The delivery time for new manufacturing equipment is critical in determining the appropriate transition period. The transition time in the Agency's proposal was calculated on the basis of delivery times which were significantly lengthened by the Covid-19 pandemic. The need to support these extended delivery periods has abated and there are benefits to the environment and human health from

controlling the risks from lead shot earlier. Reducing this transition period from 5 to 3 years is estimated to avoid 13,500 tonnes of lead emissions. While this reduction in lead emissions would result in benefits to human health and the environment, the cost-benefit assessment and cost-effectiveness ratio would not be changed substantially by a reduction to a 3 year transition period. As a result, this further economic analysis supports a transition time of 3 years.

48. I consider it proportionate to allow a derogation for elite athletes to train with lead shot for the Olympic or Paralympic games which will allow some emissions of lead to continue. These emissions are sufficiently minor as to be proportionate to avoid the unquantified cost of loss to British shooting at these competitions which still require lead use. Elite athletes will have to submit evidence of their eligibility, their identity, and the amount of lead ammunition that they will need for the year to the Agency. The Agency will record the identity of these elite athletes. Suppliers will be permitted to place lead shot on the market for these elite athletes and the suppliers will be required to submit information about these transactions to the Agency.

49. I also consider that it is appropriate to formalise current practice and restrict lead shot from being used indoors (e.g. at any indoor shooting range) as an aid to the effectiveness and practicality of this restriction – i.e. to avoid lead shot remaining on the market 'for indoor use' with the risk that, in practice, such lead shot ends up being used outdoors. This creates a full restriction on lead shot that can be enforced at the point of sale.

50. The restriction also covers the placing on the market and use of projectiles with a concentration of lead equal to or above 3% by weight. This will include large calibre bullets (≥ 6.17mm / 0.243 calibre) for live quarry shooting and will apply after a transition period of 3 years.

51. Practitioners of close-range humane killing who use large calibre bullets will be required to transition to non-lead alternatives under this restriction but their use of lead small calibre bullets will be unaffected. The Agency received advice from industry that 3 years would be a suitable time for the transition to alternative large calibre bullets and for suitable guidance to be produced. I therefore consider it appropriate that the restriction on large calibre bullets should apply after a 3 year transition period.

52. The restriction also covers the use of projectiles with a concentration of lead equal to or greater than 3% by weight. This will include lead bullets for outdoor target shooting with a derogation for sites with appropriate risk management measures. This will apply after a 2 year transition period.

53. In order to benefit from the derogation, permanent outdoor shooting ranges must submit certain details and a declaration that they have taken action to reduce the risks to the enforcing authority (Environment Agency/Scottish Environment Protection Agency/Natural Resources Wales). The enforcing authority will publish and maintain a list of outdoor shooting ranges that have submitted the information and declaration.

54. In the Final Opinion, the derogation is available for all outdoor shooting ranges. In correspondence, the Agency confirmed that it had not considered non-permanent sites and were not able to offer evidence to suggest that temporary shooting ranges could be subject to an effective enforcement regime (i.e. it would be very difficult for the

Environment Agency to effectively enforce such a derogation). As such, allowing a derogation for temporary outdoor shooting ranges could compromise the effectiveness and enforceability of the restriction. This could pose significant environmental and human health risk. Accordingly, I consider that only permanent outdoor ranges should be eligible for the derogation.

55. Large calibre bullets containing lead remaining on the market for outdoor target shooting at derogated sites, will not compromise the effectiveness of the overall restriction. Different types of bullets are used for target shooting compared to live quarry shooting. To reinforce this and to support shooters, there will be a requirement on manufacturers to place a label on the packaging of lead large calibre bullets intended for target shooting with the phrase ‘must not be used for live quarry shooting'. This requirement will apply after a 3 year transition period.

56. I have decided that lead airgun ammunition should not fall within scope of the restriction.

57. From the outset, military and non-civilian applications were excluded from the restriction. To fully cover that intent, applications in respect of government security services, private maritime security companies, Border Force and military are explicitly exempted from the scope of the restriction.

58. Indoor shooting was also exempted from the scope of the restriction at an early stage (i.e. lead bullets may continue to be used at indoor shooting ranges, since this poses no major risk to the environment and human health). However, lead shot – which is not currently used indoors for safety reasons – is now explicitly prohibited within the restriction, to avoid the continued placing on the market of lead shot given the risks that would flow from this - as detailed above.

59. Individuals with collections of lead ammunition that is not for firing – providing they hold the relevant condition on their firearm or shot gun license - are exempted from the restriction. These collections do not result in lead entering the environment and so I consider that it is proportionate to allow this. This rationale also applies to licenced museum collections holding lead ammunition, which are also exempted from the scope of the restriction.

60. The Agency indicated that some very limited use of lead ammunition is needed for the testing of materials and products such as for armour, for academic work and for forensics analysis. These activities result in negligible risks to the environment and none to human health via meat. As such, I consider that it is proportionate to let them continue and they are exempted from the scope of the restriction.

61. This decision is taken under Article 73 of UK REACH, having obtained the consent of the Scottish and Welsh Governments.

[Signed]

Emma Hardy MP

On behalf of the Secretary of State for the Department of Environment, Food and Rural Affairs

Explanatory guide to the restriction on lead in ammunition

The Government supports lawful live quarry shooting activities and lawful target shooting. This is a ban on the use of lead in shot and some bullets which requires a transition to non-lead alternatives such as steel or copper.

Lead shot

- A ban on the use and placing on the market of shot containing lead will come into force following a 3 year transition period. Any shot containing levels of lead above 1% will be considered as lead shot. This ban will apply to the use of lead shot for both live quarry shooting and target shooting.
- A derogation from the ban is available to elite athletes who are training to compete at Olympic or Paralympic level. These elite athletes will send the Agency evidence of their status, identity and how many cartridges they will need to use over the coming year and the Agency will acknowledge receipt of this information. The Agency will create and maintain a record of those persons who have notified in accordance with the requirements.
- Suppliers may sell lead shot to those persons who have notified the Agency in accordance with the requirements. The supplier must keep a record of the identity of the person to whom the supply is made, the shotgun/firearm certificate number and issuing body, and the number of cartridges supplied. The supplier must provide this information to the Agency for each notified elite athlete yearly, or on a change of any of the information previously supplied, whichever happens sooner.
- The placing on the market and use of lead shot for indoor shooting target shooting falls within scope of the lead shot ban.

Projectiles (excluding shot)

- A ban on the use and placing on the market of projectiles containing lead in a concentration equal to or greater than 3% by weight and which are not shot will come into force following a 3 year transition period.
- The ban will not apply to small calibre projectiles, and these bullets will be able to continue to be used and placed on the market for live quarry shooting. Target shooting to align the sights of a rifle (‘zeroing’) prior to live quarry shooting with these small lead bullets will be allowed. The ban will also not apply to projectiles intended for use or placed on the market for use in indoor target shooting and placed on the market for outdoor target shooting.
- A ban on the use of projectiles containing lead in a concentration equal to or above 3% by weight, and which are not shot, in outdoor target shooting will come into force following a 2 year transition period. The ban will not apply to the use of projectiles in outdoor target shooting where a permanent outdoor shooting range takes action to reduce the risks as set out in the restriction, declares to the enforcing authority that

action has been taken, and complies with the other stipulated conditions. The enforcing authority will establish, publish and maintain a list of sites that have submitted this information.

- A label will be required for all projectiles containing lead in a concentration equal to or above 3% by weight with a calibre of ≥6.17 mm that are marketed for use in target shooting. The label must indicate that they “must not be used for live quarry shooting”. This will be required on the expiry of a 3-year transition period. The label must be indelible, visible on the packaging at the point of sale, and on the product page for online sales and visibly distinct from the rest of the information included on the packaging.
- No ban will be placed on airgun pellets.

Exemptions to these bans

- The ban does not apply to applications by the Police, Military, Government Security Services, Private Maritime Security Companies and Border Force.
- Lead ammunition may be bought and used for the technical testing and development of materials and products, forensic analysis, and for historical and other technical research by academic institutions.
- Museum collections (that are licenced under the Schedule to the Firearms (Amendment) Act 1988) may continue to hold lead ammunition. The Restriction shall not apply to projectiles intended for use or used by, or placed on the market for use by, persons whose certificate conditions specify that the projectiles are not to be fired.