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3 June 2015

The Rt Hon Elizabeth Truss MP
Secretary of State for the Environment, Food and Rural Affairs
Nobel House,
17 Smith Square,
London,
SW1P 3JR

Dear Secretary of State,

Lead Ammunition, Wildlife and Human Health

I have pleasure in submitting a report on "Lead Ammunition, Wildlife and Human Health", which contains a number of appendices including substantive risk assessments, a risk register and other pertinent information.

The report is provided in three documents (the main report, the appendices, and the Risk Register) through the following link and hard copies will be provided as soon as available.
<https://www.dropbox.com/sh/y9rva002ix0esjy/AAAiWws2N3bJNj0taJb2uMiQa?dl=0>.

The report brings together the views of stakeholders and experts in the Lead Ammunition Group accumulated since the Group's establishment in April 2010. As requested by Defra and FSA the report sets out the key risks to wildlife and humans from lead ammunition, the respective levels of those risks, and explores possible solutions to the significant risks.

With respect to human exposure to lead ammunition, the report explores the risks from two pathways, namely lead in game meat shot with lead ammunition and ammunition-derived lead in domestic animals exposed to lead in the wider environment.

The report concentrates on England and the United Kingdom but sets this in context covering events preceding the Group's establishment, relevant material of recognised good quality from around the world, and discusses areas of uncertainty, all of which need to be taken into account.

The Group's detailed aims and terms of reference were provided by Defra are available on the Group's website <http://www.leadammunitiongroup.co.uk/>

The Group's stakeholder representatives have served in a strictly personal and expert capacity and the content and opinions in the report do not necessarily represent the views of any organisations with which they have been associated, and which may have supported them financially. Although established by Defra and the FSA, the Group's work has been carried out and completed entirely without Government funding.

Both Defra and FSA have attended many of the Group's thirteen main and also sub-group meetings as official observers. Defra provided the Group's secretariat at the outset and they and FSA provided meeting facilities as well as advice and support along the way. The Group is very grateful.

My personal thanks go to my colleagues of the LAG and its sub-groups, plus the many people from a variety of backgrounds who have attended meetings or contributed in one capacity or another, provided administrative, secretariat and IT website support; and in particular the members of the Primary Evidence Risk Assessment Sub-Group involved in writing the four risk assessments, which have required many hundreds of hours of work.

The report concludes that it is a matter of political judgment whether the actual and potential risks to wildlife and human health described in the report and associated risk assessments merit further mitigation effort in addition to the regulations for wetlands already in place. If it is decided that the risks to wildlife and human health need to be better addressed, there is no convincing evidence, yet available, that anything other than an eventual phase out of lead ammunition and phase in of the non-toxic ammunition alternatives will do it.

The report recognises that there are two distinct points of view. One camp disagrees with the possibility of phasing out lead ammunition, and believes that the risks from lead ammunition are not sufficiently proven, or large enough, to justify further restrictions, regulation or the replacement of lead ammunition; and moreover that banning lead ammunition could have damaging implications for shooting sports and the rural economy. Their particular concerns are that the evidence, indicating the need for replacement of lead ammunition, falls short of providing irrefutable proof of causal links between lead ammunition and the stated health effects and wildlife impacts; and is biased and motivated by people who dislike live-quarry shooting sports.

The other camp takes a contrasting view, namely that there is, nowadays, a substantial and compelling body of scientific evidence for the impacts of lead as a toxic substance, especially in recent years at very low exposure levels, and in particular from lead ammunition, for both human and wildlife health. This evidence derives from a global range of reputable scientific, medical and veterinary and public health disciplines, which has been independently risk-assessed by a number of government public health and wildlife agencies. Based on what is known about lead, and lead ammunition and its use in the UK, the possible extent of the risks and impacts is almost certainly broader and deeper than the research studies so far done in UK have revealed. Since replacements for lead ammunition are available, at relatively low cost, and have been used successfully in other countries, and furthermore other less radical mitigation options appear not, so far, to have worked (or are an unknown quantity), it is prudent to envisage and plan for the eventual phase-out of lead ammunition and the phase-in of non-toxic replacements.

Whichever way the balance of judgment falls, the following considerations are set out in the report:

- Lead is a highly toxic hazard and presents risk at all levels of exposure. It is especially dangerous as a neurotoxin for both young people and for wild animals.
- Some 6,000 tonnes of lead from ammunition used in shotgun and rifle shooting are being discharged every year. At least 2,000 tonnes of shot used for game and pest shooting are irretrievably and unevenly deposited on or close to the soil surface where it is available for ingestion by birds. It probably becomes unavailable to them quite quickly, though it remains in the soil and substrates for a long time with as yet unknown consequences. Some 3,000 tonnes are deposited on clay target shooting grounds.
- Lead from ammunition can (and does) get into wildlife by several routes, mainly by ingestion by many species of bird in mistake for grit or food items, or in scavenged dead animals, or as the prey of some raptors. In areas of intensive shooting lead is taken up by some plants and soil microfauna getting into the food chain, but the research studies that have been done on this latter route are limited.
- Lead from ammunition causes harm to wildlife and certainly kills some birds. Numbers are hard to be certain about, but almost certainly at least tens of thousands to hundreds of thousands annually in UK. The welfare effects in these animals, and the larger numbers that ingest sub-lethal doses, are sufficient to cause illness and can be very severe and prolonged for them.
- Lead shot and bullet fragments can be present in game meat at levels sufficient to cause significant health risks to children and adult consumers, depending on the amount of game they consume.
- Almost certainly some 10,000 children are growing up in households where they could regularly be eating sufficient game shot with lead ammunition to cause them neurodevelopmental harm and other health impairments. Tens of thousands of adults are also exposed to additional lead by eating game as part of their normal diet, and

this could cause a range of low level but harmful health effects, of which they will not be aware.

- Current regulations restricting the use of lead shot in wetlands and for shooting wildfowl are apparently not achieving their aim and are insufficient for dealing with the wider risks because it is now known not to be just a wetland problem; and moreover, compliance with current regulations appears in any case to be low in England, as well as far from complete, as yet, in other countries along the flyways of wildfowl. Publicity has so far had little or no measurable effect on compliance with existing regulations.
- For human health there is no evidence that existing advice from FSA and other stakeholders has so far reached target groups or affected game eating habits.
- There is currently no evidence to suggest that the will, funding or resources exist, or are being planned, to develop measures that will ensure that game and venison containing lead levels above those permissible for red meat and poultry do not enter public markets as food.
- For small game, no proposals have been made to the Group for any measure, short of lead shot replacement, that would ensure that small game entering the food chain do not have elevated lead concentrations.
- Safer alternatives to lead ammunition are now available and being improved and adapted all the time for use in different shooting disciplines. There is considerable experience from other countries where change has already been undertaken.
- There is no evidence to suggest that a phase out of lead ammunition and the use of alternatives would have significant drawbacks for wildlife or human health or, at least, none that carry the same scale of risks as continuing use of lead; though there are procedural, technical and R&D issues still to work on and resolve.
- There is no convincing evidence on which to conclude that other options, short of replacement of lead ammunition, will address known risks to human health, especially child health.

Whatever the human and wildlife impacts are today, the problems as well as public awareness of them will likely increase in the medium and longer-term future as further national and international scientific and political attention is paid to the negative health effects of lead.

Differences of opinion have polarised the Group's stakeholder representatives during the past year and now suggest that an action plan to address the foregoing, if desirable, cannot be developed in the absence of clear direction from Defra or FSA. The options are twofold: requiring improved self-regulation by the shooting and food industries (appreciating the complexities and uncertainties of this), or development of statutory and regulatory measures to phase out the use of lead ammunition.

The main report provided has been subject to considerable scrutiny by stakeholder representatives and experts during the past six months and it was circulated in final draft format to all stakeholders for comment on 7 April 2015. Six weeks were provided for comments and feedback and over 300 responses were received and evaluated. None of the responses contained new or substantial evidence affecting the report's conclusions and thrust, or added to the uncertainties and wider considerations addressed in detail throughout the report.

Since the completion of the six-week window, it is regrettable that the representatives for shooting (General Sir Barney White-Spunner), landowners and farmers (Mark Tufnell) and game dealers (Stephen Crouch) having submitted their comments, resigned from the Group before their comments could be discussed with them. Their comments were nonetheless considered systematically and each of the representatives has been provided with a detailed response to each of their comments.

The LAG process and provision of this report therefore completes its purpose of providing a full and balanced account, together with careful consideration of uncertainties, wider considerations and context, in order to inform Government policy development, as was Defra's specified key aim at the outset.

The Group will now remain in place until Defra and FSA have had time to consider and discuss the advice prior to wider dissemination, and in the meantime I have reminded colleagues that all members of the Group should respect confidentiality (even though the above resignations have been given coverage in the shooting press).

The advice from the Group as contained in this report and its risk assessments is expected to become publicly available, and the Group's website will be reorganised and completed as an accurate on-line archive given the considerable interest that the LAG approach to the issues surrounding lead ammunition has attracted around the world.

Yours sincerely,



John Swift MA MPhil
Chairman of the Lead Ammunition Group

CC Kate Fouracre, Defra; John Kilner, Defra; Gavin Shears, FSA; Dr Diane Benford, FSA