

ADVISORY COMMITTEE ON ANIMAL FEEDINGSTUFFS

71st Meeting of ACAF on 27 October 2016

Presentation Paper

Feed additives on farm – are we compliant with maximum levels?

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Feed additives on farm – are we compliant with maximum levels?

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ACAF – 27TH OCTOBER 2016

ACAF

Touches several topics in Forward Work Programme:

- Trace element status of feeds
- Feed safety – potential gaps
- Feed additive developments
- On – Farm feeding review

Legislation

- All feed additives safety assessed (EFSA) and authorised (Commission)
- Regulation 1831/2003

Technological

Sensory

Nutritional

Zootechnical

Coccidiostats

Maximum Permitted Levels

Established for additives assessed to be a safety risk to:



Animals



Consumers



Environment



Users

Maximum Permitted Levels

Apply to the complete diet

- Corrected to 12% moisture (88% DM)
- Includes all feeds / supplements / water
- Usually expressed as mg/kg

Additives with MPLs have to be declared on feed labels

BUT – EFSA and the Commission do not have faith that MPLs are adhered to!

Sources of additives with MPLs

Grass

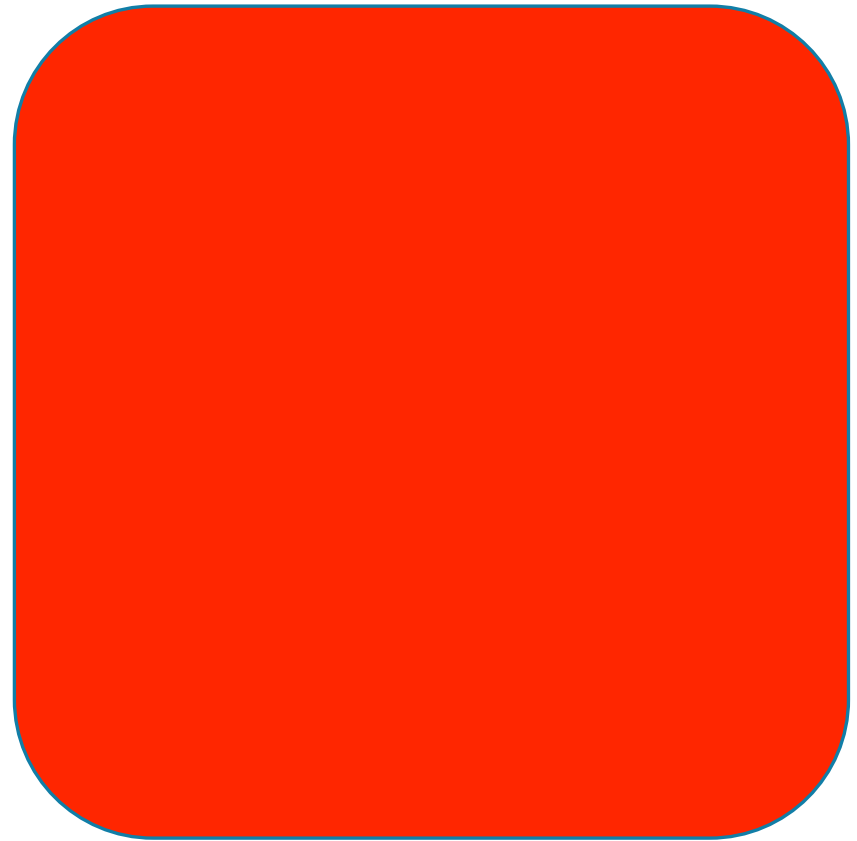
Forages

Straight feed materials

Compound feeds (complete
& complementary)

Blends (supplemented or
not)

In-feed minerals



Labelling of trace elements

Currently as 'added level' of

Salt or compound



Likely to change back to 'added level' of

Actual element

Cu

Where is the concern?

Ruminants:

- Multiple supplementary feeds

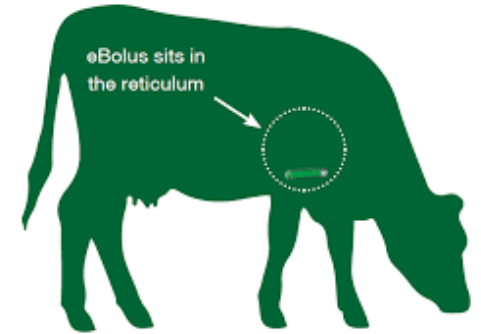
Monogastrics:

- Water supplementation
- 'Supplements' – especially hobby farmers

Horses & Pets:

- Supplements / treats

Boluses



May be

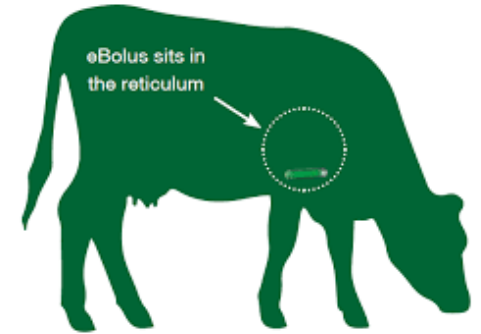
Licensed medicinal products

Complementary (dietetic) feeds

For cattle and / or sheep

Commonly providing Copper / Cobalt / Selenium

Boluses



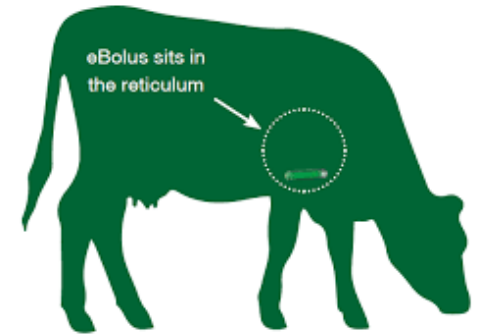
Licensed products:

Prevention & treatment of trace element deficiencies

No other form of supplementation should be given immediately prior to or 6 months after administration (4.5 months if concentrates fed)

Out of scope of regulation

Boluses



Nutritional products:

May have similar specification to licensed products

Dietetic feeds – purpose listed in Annex to Dir. 38/2008

Cannot make medicinal claims

Definitely in scope of the MPLs for the elements supplied

Drenches



Nutritional drenches

Typically Cobalt, Selenium, Vitamin A,
Vitamin D3

Available on internet – sometimes with no
specifications!

Some exceed MPLs on their own, before any
other feed is given!

Drenches



Anthelmintic drenches

Veterinary medicines

May also contain trace elements (Se, Co)

Nutrients not part of the licensed product –
nutritional supplement!

Elements are in scope of MPL controls and
can exceed MPLs on their own!

Drenches



Example – nutritional drench

500kg suckler cow, 15kg DMI (17kg 88%DM)

Drench 20ml/100kg BW = 100ml

Nutrient	Intake per dose mg	mg/kg feed (88%DM)	MPL mg/kg feed (88%DM)
Cobalt	150	8.82	1
Copper	800	47.1	35
Selenium	30	1.76	0.5

Drenches



Example – anthelmintic drench + Se & Cu

300kg beef, 10kg DMI (11.4kg 88%DM)

Drench 75ml

Nutrient	Intake per dose mg	mg/kg feed (88%DM)	MPL mg/kg feed (88%DM)
Cobalt	54	4.7	1
Selenium	24	2.1	0.5

Drenches on the Internet

Not indicated as dietetic feeds

Unauthorised additives (e.g. 'chelated cobalt')

Implied 'slow release'

Recommendation to feed with other vit /min products

No precautions re use with other supplements

Labelling information not compliant

Sometimes none at all

No indication of sources of nutrients

Nutritional supplements

Many and varied

Sold via merchants & saddleries

Particularly for hobby farmers & horse owners

Many supply additives > MPL

May be sourced from non-assured suppliers

Some products illegally labelled – impossible to assess nutritional additive levels

Some products sold on internet with little or no statutory information



Water supplementation



Example - vitamin intake exceeding MPL - broilers < 14 days of age

Dry feed plus water miscible vitamin product used at 1ml/L drinking water.

Dry (88% DM) feed intake: 69g/day, drinking water intake: 119ml/day.

Vitamin	Content in feed, iu/kg	Content in water dispersible formulation, iu/L	Content in drinking water, iu/L	Daily vitamin supply via dry feed, iu/bird/day	Daily vitamin supply via water, iu/bird/day	Total daily vitamin supply, iu/bird/day	Vitamin concentrations in complete diet, iu/kg feed	Maximum Permitted Level of vitamins in complete diet, iu/kg	Percentage over-supply after water treatment %
Vitamin A	12,000	6,000,000	6,000	828	714	1,542	22,348	20,000	11.7
Vitamin D3	5,000	1,000,000	1,000	345	119	464	6,725	5,000	34.5

The feed alone does not exceed Maximum Permitted Levels.

The water alone (assuming no feed supplementation) does not exceed Maximum Permitted Levels

Water supplementation in addition to the feed exceeds Maximum Permitted Levels and is illegal.

SO WHAT?

Do we have problems in UK?



Animal &
Plant Health
Agency

Chemical Food Safety Reports
Disease Surveillance Reports

Reported incidents

Date	Incident	Outcome
March 2014	Copper toxicity	3 sheep dead
July 2014	Vitamin D toxicity	Renal mineralisation
December 2014	Copper toxicity	Dairy calf
March 2015	Selenium toxicity*	12 ewes dead
April – June 2015	Copper toxicity	35 cows – some dead
July – September 2015	Copper toxicity x 3	21 sheep dead
October – December 2015	Copper toxicity	1 dairy cow dead

Are cattle being copper loaded?



A significant proportion of the UK dairy herd is at risk of chronic copper toxicity

Are cattle being copper loaded?

Type of cattle	% with liver Cu above AHVLA / APHA upper ref. value 8000 μ mol/Kg DM
Holstein dairy	38.3
Other dairy	40.0
Bulls (mixed beef & dairy)	21.4
Beef females	16.9

No clear link to age or soil copper levels

Are cattle being copper loaded?

6/50 farms in regional study exceeded copper MPL in feed (40mg/kg DM)

32/50 farms exceeded guidance level of copper in feed (20mg/kg DM)

Guidance note - copper

Industry Guidance Note – July 2011

Endorsed by:



Advisory Committee on Animal Feedingstuffs

Guidance Note for Supplementing Copper to Bovines

You are encouraged to discuss this guidance with your veterinary and nutritional advisers.

This leaflet aims to outline some practical advice on the use of copper in feed for bovines on farms in the UK.

INTRODUCTION

Background

Copper is an essential trace element for animals. Copper toxicity resulting from over-supplementation is becoming a more common condition in cattle, especially dairy cows. While there may be several sources of copper in the diet that individually are not in excess, together they can cause copper toxicity. This has prompted an industry-led working group to investigate the causes of copper toxicity in cattle. There is some uncertainty regarding the incidence of copper over-supplementation in dairy cattle. Nevertheless, the aim of the guidance note is to provide clear and practical advice about copper supplementation and associated legislative requirements.

Maximum Permitted Level (MPL) of copper in cattle feed

EU Regulation 1831/2003 on additives in animal feed sets the MPL for copper in cattle feed at 35 mg/kg (ppm) at 88% dry matter (DM), which equates to 40 mg/kg on a dry matter basis. Supplementation at levels greater than this can only be undertaken after a full risk assessment and by written prescription by the veterinary surgeon responsible for the animals. The MPL is based on the complete feed and should include inputs from complementary feedingstuffs such as boluses or licks, but does not include input from water.

COPPER REQUIREMENTS – FACTORS TO CONSIDER

Copper uptake from the diet

The uptake of copper by ruminants is variable.

- Antagonists such as sulphur, iron and molybdenum can reduce copper availability to varying degrees. Soil, certain diets and water may all contain antagonists.
- Estimating copper availability in the presence of antagonists has largely relied on calculations derived from sheep experiments extrapolated to cattle. Use of these models should be minimised to avoid confusion and to reduce the risk of inadvertent over supply.
- Organic forms of copper may have different bioavailabilities than inorganic forms therefore consideration should be given to the form of copper used.

Nutritional requirement of copper in cattle

- Under normal conditions, and in the absence of significant antagonists, total copper in the total ration should typically be 20 mg/kg DM.

Managing copper supplementation

Copper supplementation should be managed by farmers, nutritional advisers and vets on a case by case basis.

Just Copper?

Survey also found over-supplementation of:

Zinc

Manganese

Iron



Cost?

Animal Health?

Environmental impact?

Regulatory consequences?

Is feed over-supplemented?

EFSA report re copper

Animal group	Category	No. samples	Samples > MPL, %
Poultry	Starter chicks	63	7.9
	Laying hens	440	5.9
	Fattening chickens	360	7.2
	Ducks & Geese	91	4.4
	Fattening turkeys	203	7.9
Pigs	Piglets	1420	8.8
	Fattening pigs	2034	12.9
	Sows	546	20.1
Ruminants	Fattening cattle	42	0
	Dairy cows	31	6.5
	Sheep	30	0

Revision of currently authorised maximum copper content in complete feed, EFSA 2016

Relative risk of exceeding MPL?

Product type

Product related	Risk level	Comment
Compound feed	Low	Mainstream industry well trained.
Free access minerals	Low - Medium	Multiple feed sources. Variable intake.
Boluses	Low - Medium	Multiple feed sources.
Drenches	Medium - High	Big single doses.
Supplements	Medium - High	High for hobbyists. Inaccurate measurement & mixing.
'Treats'	Low	Not usually supplemented
Water soluble / miscible	Low - Medium	Medium for poultry.

Relative risk of exceeding MPL?

Industry source

Source of product	Risk level	Comment
Feed Compounders	Low	Industry accreditation / FAR.
Feed Merchants	Medium - High	Variation in level of staff training?
Saddlers / Pet Stores	Low - Medium	Customer understanding. Nutritional knowledge of staff?
Internet	Medium - High	Customer understanding. Lack of on-line data.

Relative risk of exceeding MPL?

Advice source

Adviser type	Risk level	Comment
Independent advisers	Low	Species specialists. FAR. Overall responsibility.
Feed compounder advisers	Low	Species specialists. FAR. Overall responsibility.
Feed merchant / saddlery staff	Low - Medium	Training / engagement time. Overall awareness.
SQPs	Low - Medium	Good veterinary training – nutrition training?
Pet store staff	Low - Medium	Little customer interaction
Vets	Low - Medium	Variable knowledge level

Relative risk of exceeding MPL?

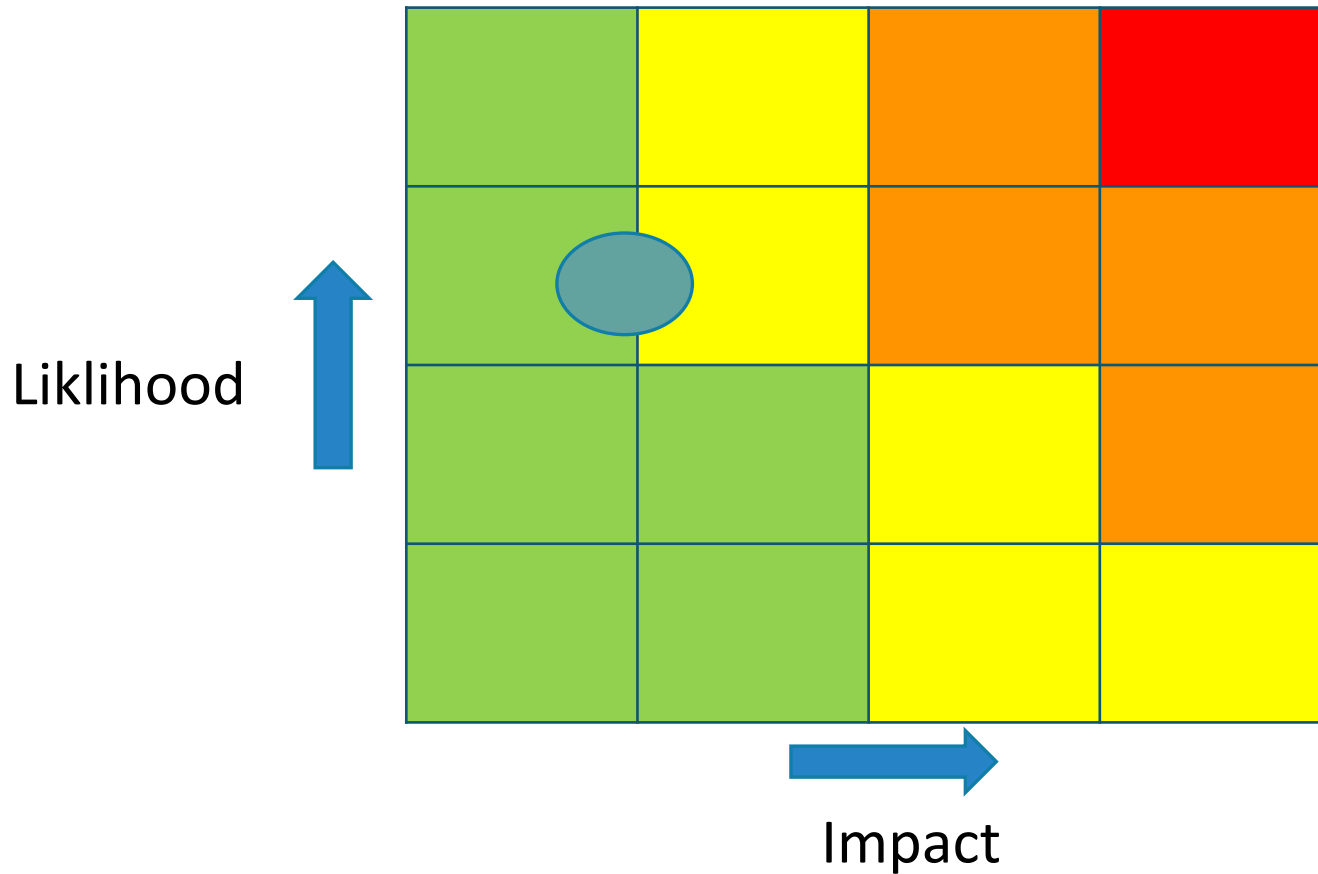
Type of unit

Unit related	Risk level	Comment
Large scale	Low	Usually advised by nutrition professionals.
Small scale / hobby farmers	Medium - High	Over-supplementation out of 'kindness'. Less technical knowledge.
Individual horse / pet owners	Low - Medium	Over-supplementation out of 'kindness'. Less technical knowledge.

Impact of over-supply

Impact	Risk level	Comment
Animal Health	Low - Medium	Specific examples – e.g. copper
Consumer health	Low	Links to over-consumption of foods
Environmental	Medium - High	Concerns over trace elements. Aquaculture
User safety	Low	

Impact of over-supply



What have we done?

- 2 stakeholder meetings, with FSA involved
- Articles in 'Feed Compounder' and 'Over the Counter'
- Papers at BAFSAM conference 2015, SFT conference 2016 and IGTA conference 2016
- 2 x Feed Adviser Register circulars
- Further articles in development for farmer magazines

What next?

Awareness raising through:

- Feed Advisers Register?
- Training for merchant, SQPs, saddlery and pet shop staff, enforcement officers, QA auditors, vets?
 - Work with other associations
 - Explanatory leaflets?
- Reference in FSA 'feed hygiene requirements for farmers mixing additives in feeds & mixing compound feed with additives'?
- FEFAC & FEDIAF Codes of Good Labelling Practice?
- NFU Code of Practice for on-farm mixers?

What next?

Awareness raising through:

- ACAF Review of on-farm feeding practices?
- ACAF guidance document for all groups?

Thank you
