<u>PETITION JUSTIFICATION STATEMENT.</u>
<u>Sydney; 10 June 2016.</u>

We have been asked:
'… to explain why the petitioned materials would be better than the non-synthetic and/or synthetic chelating agents that are already allowed'.
(Refer: USDA letter dated 7 June 2016).

We respond to this request in the following 5 Sections.

Section 1: Documentary evidence on chelating agents.
Section 2: Diagram 2: The correct 3-stage analysis of chelate production.
Section 3: Diagram 3: Erroneous 2-stage analysis of chelate production.
Section 4: Statement of reasons for acceptance of petitioned substances.
Section 5: Justification for granting Priority 1 in the queue of the NOSB Crops Subcommittee to our Petition.

Section 1: Documentary evidence on chelating agents.

We provide documentary evidence in paragraphs A, B, C, D and E below showing that every organic-certification agency in USA and Australia considers that acids are chelating agents.

[A]
NOP 5034-1 'Draft Guidance on materials':-

"Chelating agents.
Nonsynthetic:
Natural chelating agents are allowed.
Allowed materials include non synthetic amino acids, citric acid, tartaric acid made from grape wine and gluconic acid."

Note:
- - The word 'acid' is repeated four (4) times in this extract and the word must therefore be considered as a deliberate inclusion.

[B]
Australian National Standard for Organic and Bio-Dynamic Produce, 1 February 2015:- Appendix 1, Annex B.

"Permitted materials for soil fertilising and conditioning:-
Substances:
Trace elements & natural chelating agents, e.g. ligno sulphonates & those using the natural chelating agents e.g. citric, malic &other di-/tri-acids".

Note:
- - The reference to an 'acid' in the context of 'natural chelating agents' is repeated three (3) times in this extract and the inclusion must therefore be considered as deliberate.

[C]
Australian Certified Organic Standard 2010, version 1.0.
Annex 1: Crop production Inputs, page 97:-

"Chelates (natural):
*"Including chelates produced utilising **chelants** such as amino acids, citric acid, tartaric acid and other di-and tri-acid **chelatants** (sic)".*

Note:
- - The word 'acid' is repeated four (4) times in this extract and the word must therefore be considered as a deliberate inclusion.
- - An alternative, technically correct word for 'chelating agent' is used namely 'chelant'.
--The word 'chelatant' is meaningless and is believed to be a typographical error uncorrected in the public document.

[D]
OMRI Generic Materials List using the search term *'chelates'*:-

"Status: Allowed.
Class: Crop Fertilisers and Soil Amendments.
Origin: Nonsynthetic.
Description: Non-synthetic chelates (including , but not limited to: non synthetic amino acids, citric acid, tartaric acid , and other di- and tri-acid chelates) and synthetic lignin sulphonate are allowed.
See OMRI Glossary for definition of "chelates".
NOP Rule: 205.105."

Note:
- The word 'acid' is repeated four (4) times in this extract and the word must therefore be considered as a deliberate inclusion.
- We can see that OMRI go to the length of quoting "NOP Rule 205.105" as an authority. However, it seems clear that they have no justification for doing so because NOP 205.105 is actually silent on the topic — as is NOP 205.601.(j) , dealing with 'plant or soil amendments'.

CONCLUSIONS from a study of the organic documents.

From the 4 examples, A, B, C and D above it is abundantly clear:

- That exactly the same words and same acids are everywhere being referred to,
- That the words are not used by accident but intentionally,
- That the agreed technical expectation is that acids are chelating agents.

All this is not supportable.

Also not supportable is OMRI's definition of 'chelate' *(see 'E' below).*

[E].
Extract from **OMRI Glossary of Terms:-**

OMRI's 'Glossary of Terms' shows the following definition for 'chelate':-

“Chelates:
Compounds that bind polyvalent metals at two or more cation exchange sites”.

This definition is unsupportable.

- The compounds that actually do the binding with the metal at two or more exchange sites are termed ‘chelating agents’.
- The products of such chemical-binding are termed ‘chelate’.

OMRI have got it back to front.

However, in an email from OMRI in 2015, they say that an error in a definition is not necessarily detrimental to the rest of their organic-certification documents. They seem to be unaware that it is completely unsatisfactory to consider that a chelating agent and a chelate are the same thing.

SUMMARY of Section 1:-

The whole situation with chelating agents and chelates as presented in US and Australian organic-certification documents is not supportable.

We feel that the problem stems, in very large part, from silence and misunderstandings in NOP’s own documents.

NOP must accept that their own documents act as ‘parent documents’; NOP’s documents spawn ‘daughter documents’ on the basis of NOP’s perceived authority in the organic-certification field.

NOP have pointed out to us that they are not responsible for how ‘downstream agencies’ use NOP’s data.

However, NOP are responsible for their own omissions and misunderstandings.

It is NOP’s omissions and misunderstandings that have enabled guesswork to flourish downstream even if NOP has not been directly involved in its generation.

The situation is that:-

- Paragraphs A, B , C and D above convincingly demonstrate the belief held by authorities that organic-acids can act as chelating agents; the fact is they can’t.
- Paragraph E above demonstrates the belief that chelating agents and chelates can be considered interchangeably; the fact is that this is a wrong belief.

This inconsistency, this lack of precision, the misunderstandings use of commonly understood technical terms to create a new language, this confusion and outright error is completely unsupportable.

….. and yet this situation has been allowed to exist in the organic-certification documents, unchallenged, for nearly 2 decades!

..…and furthermore, in seeking acceptance as ‘organic’ of a newly formulated chelating agent from Australia, we have been asked by NOP to further extend our previous 4 versions of Petition Justification Statements and justify why our specific, demonstrably correct interpretation should replace the current incorrect one!

This situation is determinedly defended also in Australia.

We ourselves have unsuccessfully communicated about this topic for 7 years with the Australian organic-certification authorities; their conclusion, once they acknowledged the omission of an alkali from the reaction requirements was that it is not their responsibility to make technical corrections to the parent documents.

Section 2:
DIAGRAM 2 : The correct 3-stage analysis of chelate production.

Diagram 2 *(attached)* shows the correct material flow for chelate manufacture:-

- A selected acid and a selected base are reacted to form a ‘salt’ (an organic-chemistry salt).

- The deliberately chosen organic-chemistry salt must have the potential to form at least 2 bonds to a central metal ion if it is to be classed as a chelating agent; this is required by the definition of chelate as documented by the International Union of Pure and Applied Chemistry (IUPAC).

- The deliberately formed chelating agent is reacted with yet another substance — this time a ‘metal salt’ — to form a chelate.

The specialty field of manufacture and use of ‘organo-metal complexes’ in organic-certified production can readily be accessed **if the principles shown in Diagram 2 are observed.**

There is logic to selection of each raw material in Diagram 2.

There is logic in each reaction step in Diagram 2.

There is logic and predictability in the reaction outcomes from Diagram 2 .

But there are inherent requirements in such reaction schemes so that predictability and sustainability are assured; thus both quantity and quality of raw materials must be reproducibly calibrated.

Compare this with the unsupportable approach in Diagram 3 resulting from an erroneous understanding exactly as extracted from current organic-certification documents.

Section 3:
Diagram 3: Erroneous 2-stage analysis of chelate production.

In making a comparison between Diagrams 2 and 3 — which have been deliberately prepared in a identical format and colour — it will be noted in Diagram 3:-

- That there is no selection of a base (or ‘alkali’) to neutralise the selected acid .

- That a base is completely omitted and that a base is not considered as an essential raw material.

- That, as a consequence of the omission of a base, there can be no chemical neutralisation of the selected acid.

- That, as a further consequence, there can be no possible chemical reaction to form a chelating agent.

- And as a final consequence, that there can be no possible chelation-reaction between the un-neutralised acid and a synthetic metal salt to form a chelate.

It does not help that each organic-certification agency requires use of '*natural amino acids'* or *'natural chelating agents'* to produce *'natural chelates'* as soil fertilisers or amendments.

Firstly, working backwards from the end of the last sentence:

There are <u>no 'natural chelates</u>' for agriculture — all chelates for agriculture must be manufactured.

Secondly:
It seems reasonable for the certification authorities to require the use of 'natural' amino acids **<u>IF</u>** all that is required to form a natural chelate is to mix natural amino acids with a metal salt. It is of no significance in this presumed (but unrealistic) reaction circumstance that a natural amino acid might be composed of 8-11 different amino acids with :
- glycine at perhaps 25-30 % by weight,
- proline at perhaps 15-20 % by weight
- hydroxy-proline at perhaps 10-15% by weight
- 6-8 or more additional amino acids making up the remainder, each in small, unquantified and ever changing amounts by weight due to the 'natural' system of fermentation or hydrolysis chosen as the production reaction route.

- We have continually wondered why, when glycine is considered acceptable in a mixture at approximately 30% by weight, it is not acceptable at 99% by weight?
- What is the advantage in insisting that a highly variable, heterogeneous mix of amino acids be sourced as a raw material for chelate production especially when these variable acids are definitely later required to be accurately neutralised with an alkali?
- Is it not relevant to organic-specification decisions that the total amounts of nutrient trace metal required as replenishment to broad acres is of the order of only 100-200 grams per hectare?
- See paragraph 11 in Section 4 (below) for proof of the use of only **0.2 - 1 US ounce of nutrient per acre per ton** ie there is only a micro-requirement for micronutrients. What can be the perceived danger in the use of such small quantities? What problem is foreseen by NOP because these small quantities are necessarily synthetic molecules?

The key problem arises from the fact that the need for neutralisation of the organic-chemistry acid has been overlooked and, hence, all the specifications for chelating agents and chelates are technically not feasible.

It seems to us that it would be a good idea for NOP to acknowledge the fact about 'no natural chelates' in order to liberate considerations concerning which specific chelating agents and chelates will be allowed to be manufactured and used for organic-certified crop production.

It would also be a good idea for NOP to avoid supporting a terminological system whereby a chelate produced from a synthetic metal salt (*already allowed in 205.601. (6), (ii))* is able to be classified in the organic-certification documents as 'natural'; some terminological editing by OMRI and NOP would benefit consistency.

SECTION 4 .
Outline of reasons for acceptance of petitioned substances.

Our additional responses to the request ***'…explain why the petitioned materials would be better than the non-synthetic and/or synthetic chelating agents that are already allowed',*** *is set out under paragraph headings numbered from 1 to 12 as below for ease of reference.*

1.
The substances and materials currently allowed for use as alleged chelating agents simply do not work as chelating agents due to technical misunderstandings.
Currently approved substances simply do not have the chemical capacity to act as chelating agents *(as discussed in Section 1 above),* whereas the petitioned substances do have that capacity *(as shown by several successful field trials carried out with chelates produced from the petitioned chelating agents).*

What is needed to be used as a chelating agent is the salt of an acid whereas what is documented as approved at present as the chelating agent is use of the acid alone.
In summary:

- that which is needed for manufacture (an alkali) is forbidden, and
- that which is specified for manufacture (an heterogeneous mix of acids) is not appropriate.

What is needed to correct the situation is a study of the granularity of the problem just as NOP has done with its detailed study of GM processes; we raise various discussion topics below to suggest the scope of future study involved.

2.
Chelation reactions require the existence of at least 2 negatively charged —$[COO]^{-1}$ radicals to bond with a central metal ion.
Substances currently approved by NOP as chelating agents simply do not satisfy this requirement.

3.
Negatively charged —$[COO]^{-1}$ radicals are formed by altering the zero-charged —$[COOH]^{0}$ radical existing within the selected organic-chemistry acid.
Formation of negative —$[COO]^{-1}$ radicals is achieved by chemically neutralising the —$[H]^{+1}$ proton from within —$[COOH]^{0}$ with an —$[OH]^{-}$ radical from within a base ('alkali').

NOP, OMRI and the Australian organic-certification authorities, all of them, completely omit the use of a neutralising alkali in their documentation for the alleged formation of a chelating agent. The commonality of terms used by all these authorities *(as shown in Section 1)* is matched by the commonality of the complete omission of an alkali. There can be no question about the degree of the omission of an alkali — the omission is absolute.

4.
Negatively charged—$[COO]^{-1}$ radicals resulting from chemical neutralisation have the capacity to form 'coordination bonds' with the central metal ion of a metal salt. When at least 2 of these bonds are formed, the created substance may be termed a 'chelate' under International terminological conventions (such as from IUPAC).

5.
Accurate and reproducible neutralisation of acids and bases needs to be done 'stoichiometrically'; this is a reference to a manner of proceeding on a pre-calculated, quantitative basis using weighed quantities, known purities and specific molecular weights of known, 'commercially-pure' chemical compounds either naturally occurring or 'nature-equivalent'.

6.
Omission of the use of an alkali by all the organic-certification authorities allows them to feel free as to the specification for the acid to be employed for creation of a 'chelating agent' *(which is of course not formed).* It is in this circumstance of erroneous understanding that the organic-certification bodies specify the use of 'natural' acids; these 'natural acids' can be expected to have varying compositions both as to specie and analysis, whereas the use of 'nature-equivalent' acids of known composition is mandatory for accurate neutralisation with an alkali.

7.
It is worthwhile to stress the scientific principle:
Predictable end points of a known stoichiometric reaction require that the weights, composition and purities of the reaction compounds *(the 'raw materials')* be accurately known.

8.
The petitioned substance **ammonium glycinate** (*the mono-ammonium salt of glycine)* employs an amino acid termed 'glycine', the simplest amino acid in the universe; it also employs as a base the simplest organic-chemistry alkali in the universe termed ammonium hydroxide.
It would be perverse indeed if, in intending to permit chelating agents and chelates for organic-certified agriculture, the simplest amino-acid available and simplest organic-chemistry alkali available were to be classified as un-acceptable due to a fundamental, documented misunderstanding of the chemical and stoichiometric requirements for formation of chelating agents.

9.
The petitioned substance **ammonium citrate** (*ammonium salt of citric acid)* employs one of the simplest poly-carboxylic acids in the universe, namely citric acid; it also employs the simplest organic-chemistry alkali in the universe namely ammonium hydroxide.
It would be perverse indeed if, in intending to permit chelating agents and chelates for organic-certified agriculture, one of the simplest poly-carboxylic acids available and the simplest organic-chemistry alkali available were to be classified as un-acceptable due to a fundamental, documented misunderstanding of the chemical and stoichiometric requirements for formation of chelating agents.

10.
The necessity for chelates in every form of agriculture is pre-conditioned by alkalinity of soil.
An **in**organic-chemistry law termed 'Solubility Product' predicts that as alkalinity increases, the concentration of a metal ion in solution decreases; the rate of decrease is extremely rapid.
For example:

- For the 4 micro-nutrient metals of +2 valency *(namely Copper , Iron, Manganese and Zinc, collectively referred to as [M] herein)* every increase of pH by one unit means that the solubility of the metal in water decreases by a factor of 100; for an increase of two pH units, the decrease factor is 10,000.

NOP is aware of these physical and chemical laws and so NOP has, it seems, an implicit intention to permit the use of chelates — when necessary.
It is preferable nevertheless that the intention be made **explicit** and that those commercially-pure and nature-identical raw materials necessary for successful manufacture of chelating agents — and acceptable to NOP — also be made explicit.

11.
The use of the term 'micro-nutrients' (for the 4 different trace metals referred to as [M] herein) is technically correct and is preferred to the term 'trace metal'. Here are 4 examples of the micro-scale at which plants consume micro-nutrients:

Maize at 3 tons per hectare: Cu 12 grams, Mn 135 grams, Zn 40 grams
Sunflower at 1 ton per hectare: Cu 7 grams, Mn 30 grams, Zn 25 grams

Onion at 6 tons per hectare: Cu 4 grams, Mn 36 grams, Zn 30 grams
Oranges at 56 tons per hectare: Cu 34 grams, Mn 45 grams, Zn 80 grams.

(Data from CSIRO, Australia).

A transformation of the above data shows:-

Copper range: 1 - 10 grams per ton per hectare.
Manganese range: 1 - 50 grams per ton per hectare.
Zinc : 1 - 25 grams oder ton per hectare.
Note that the crop consumptions of micronutrients vary with both crops type and crop yield.

When we transfer the above quantities into units employed in USA, we see that the required nutrient range is of the order of :-

0.2 - 1 US ounce of nutrient per acre per ton.

(Using 28 grams per ounce and 2.47 acres per hectare).

The data shown refers to the amount of nutrient removed in crops, leaves and stalks. This means that, at least as much of each nutrient as shown must be **replenished** for the crop operation to be sustainable…and at least as much of the nutrient as shown must be available in the soil for accession by plant roots. NOP understands that it is chelates which, because of their protective function for the trace-metal ion, enable micronutrients to be “delivered” and to remain “available" in all conditions of soil alkalinity.

It is precisely because of the very small plant consumption rates of essential micronutrients, as illustrated, that we recommend that careful, specialist attention be given to a revision of the NOP documents concerning chelates; this in turn will mean that NOP’s parent documents used as source by OMRI and Australia will contain explicit authority to proceed with the necessary ‘downstream’ amendments.

12.
Statements in response to NOP 311 of the National List Petition Justification guidelines.

In relation to clause 13 , sub clause A , “Inclusion of a synthetic in clause 205.601”.
We address each dot point of clause 13A in 12.1, 12.2 and 12.3 below.

12.1
Explain why the synthetic substance is necessary for the production of an organic product.

Because the petitioned substance is termed a ‘chelating agent’ and because it has an essential role in formation of a chelate , it becomes necessary to understand the role of a chelate in delivery of nutrients to plants.
A chelate is the name reserved for chemical molecules in the field of organic chemistry when they are formed with at least 2 bonds to a central metal ion. These bonds ensure chemical stability of the molecule in aggressive soil conditions defined as any soil with a pH > pH ~ 6.2-6.5. The chelate structure has the desirable property that it protects the central metal ion of [M] from
precipitation reactions with alkaline materials in soil. In alkaline soil, the currently permitted metal salts become ineffective due to precipitation of the metal hydroxides. Precipitation is sometimes referred to as ‘nutrient lock-up’; this means that the now solid-state nutrient becomes un-available to plant roots which can only absorb nutrients dissolved in ‘soil solution’. Nutrient lock-up results in the soil remaining in its initial state of nutrient deficiency thereby encouraging desperate growers to

adopt agronomic practices where 4 - 5 times the required metal rate might be added to the soil in the form of currently approved sulphate substances.It can be said that a chelate keeps the nutrient in a condition of ‘let-down’ or continuous availability to plant roots.
The current NOP regulations make reference to only one chelating agent ‘lignin sulfonate; see 205.601. j. 4 .This is a salt of ligno-sulfonic acid using an undefined base (alkali).
It is possible to question whether lignin sulfonate would qualify as a chelating agent according to IUPAC’s definition.
As discussed in Sections 1, 2 and 3 above, the currently approved materials termed chelating agents are not capable of carrying out chelating reactions— hence the preparation of our 2 petitions in which we request approval for use in organic-certified crop production of our chelating agents already proved to be successful in chelating the four [M] metals.

12.2.

Describe any nonsynthetic substance, substances on the National List or alternative cultural method that could be used in place of the petitioned synthetic substance.

12.2.1 non-synthetic substances

To our knowledge, there are no nonsythetic substances which could be used as chelating agents in place of our petitioned substances.
In relying on this statement, we refer the reader to our detailed discussion as presented in Sections 1, 2 and 3 herein.

12.2.2 substances on he National List.

To our knowledge, there are no substances on the National List which could be used as a chelating agent in place of our petitioned substances.
We again refer the reader to our detailed discussion in sections 1, 2 and 3 herein.

12.2.3 Alternative cultural methods.

It is technically certain, and in the context of micronutrients and their chelates, it needs to be stressed that there are no ‘alternative cultural methods’ which could be used in place of chelating agents, such as in our petitions.
It needs to be remembered that the 4 micronutrient metals [M] are consumed by plants and, by definition, are removed to a very high degree from the crop-production-site; these [M] must be replenished; and these [M] must be replenished in a form that is adequate in quantity *(and this varies with the crop - see paragraph 11 above)* and is also of a suitable chemical stability in the acidity characteristics of the site. The materials in [M] are usefully categorised as an ‘external input’ ie they need to be brought in from outside the farm gate because they do not exist on the farm and cannot be manufactured from locally available materials.
On the other hand, we acknowledge that composted materials do contain some [M]., and possibly even in a naturally chelated form, probably using the smallest amino acids and alkalis created in external nature (eg glycine and ammonium hydroxide could actually be reacting in compost heaps, but we do not know of studies to prove that this has happened.).
However, it will generally be the case that the quantities of each of the 4 [M] in a composted material are very low and, further, are produced in a fixed ratio (or in only a small variation from a given level) in each compost heap, depending on the source materials of that compost heap.
This creates a limit to the usefulness of compost for a wide variety of crops because crops themselves vary by a factor of 10 or more in their need for specific micronutrients.*(see examples in paragraph 11 above).*

12.3 Describe the beneficial effects to the environment, human health or farm ecosystem from use of the synthetic substance that supports is use instead of a nonsynthetic substance or alternative cultural method.

12.3.1 - Environment

The environment will benefit from the use of properly formulated chelates because growers will have available a useful substance and thus will stop using excess sulphate salts in their desperate attempts to provide micronutrients to plants growing in alkaline soil.

When chelates are properly used to replenish nutrients removed in previous crops, they add to farm productivity. An increase in farm productivity is beneficial to the environment because of the lower requirement for land, labour and energy per unit of output.
What needs to be remembered is that we are dealing with an item essential to healthy plant growth, namely micronutrients of copper, iron, manganese and zinc.
In some circumstances, use of simple sulphate salts is OK; they can work well in specific circumstances.
In other circumstances, science has identified a simple means of keeping micronutrients in soil solution, namely via the use of chelates. Quantities of chelates required vary with crop type and yield but in nearly all cases the need for micronutrients is of the order of 100-200 grams of metal per hectare (= ~ 1.5 - 3 US ounces per acre); this indeed is a small quantity — but nevertheless it is as essential as the major nutrients Nitrogen, Phosphorous and Potassium.
Modern science (including geology, botany, organic chemistry and inorganic chemistry) has identified means of determining soil characteristics as well as plant requirements and delivering these requirements in the small quantities required accurately, reliably and cheaply.
Our petitions are yet another step along the way of encouraging positive developments in the field of organic-certified crop production.

12.3.2 Beneficial effects to human health.
The benefits to human health from an assured supply of micronutrients in food depend on the situation in each country.
In developed countries, we are unlikely to often meet with micronutrient deficiency symptoms of e.g. iron or zinc. This is because these well-off countries have a wide choice of meat, fruit and vegetables thereby enabling a choice of foods; this itself helps to limit or prevent the occurrence of deficiency symptoms.
However in developing countries, where the choice of foods is often restricted to one staple grain, combined with a limited choice of vegetables, the exposure to micronutrient deficiencies is high. It is for this reason that children living on the Indo-Gangetic-Plain , comprising Pakistan, India and Bangladesh, have a noticeable, high rate of occurrence of cretinism, caused by a deficiency of iron and zinc in the grain head. The UN and its agencies such as FAO have embarked on decades long research projects to find grain varieties with a ‘high nutrient density’ so as to help prevent the diseases prevalent from deficiencies. We feel that a good technical solution would be to also use properly formulated chelates so that the soil receives an immediate injection of essential micronutrients — effective in whatever soil conditions happen to exist on the planet.
The key point to remember is: If for example zinc is deficient in the soil or in the human diet, it is only zinc that is capable of rectifying the deficiency.

12.3.3 Beneficial effects to the farm ecosystem:
The benefit to the farm ecosystem from the use of properly formulated micronutrient chelates comes from 2 aspects:

- Less run-off of those micronutrients applied to excess by farmers in a desperate hope that more sulphate salts need to be applied and will produce results in a high pH environment; this is a false hope held by those who would deny the rules of inorganic chemistry and Solubility Product.

- Lower demand for land, labour and energy from the increase in farm productivity resulting from properly planned nutrient applications, keeping in mind both quantity and performance characteristics.

Section 5: Justification for granting Priority 1 in the queue of the NOSB Crops Subcommittee to our Petition.

Consideration of Revision 4 of our Petition on the topic of chelating agents dated 23 March 2016 was placed on the ‘to be confirmed’ timetable for consideration. Since then, we have received a letter from AMS dated 7 June 2016 requesting further information - hence this report.

My formal request herewith is that the NOSB Crops Subcommittee accelerate its timetable so that chelating agents and the attendant chelates will achieve a decision at the Fall 2016 meeting of NOSB.
Justification for this request commences with the intellectual position:

- There are errors in documentation within OMRI and NOP on chelates and chelating agents.
- These errors were pointed out to OMRI as long ago as 2010 - and again in 2015.
- No action has been taken by OMRI to correct the errors.
- Meanwhile, OMRI have continued with their superstructure based on foundational conceptual errors.
- OMRI use NOP documents as justification for its own contents even when NOP is silent on a topic.
- NOP is essentially silent on chelating agents and chelates.

We acknowledge prior comments from NOP to the effect that NOP is not responsible for ‘downstream’ authorities in the field of organic-certification.
But silence from NOP on a particular topic creates exactly the situation where guesswork by others finds room to flourish on the whole topic of ‘organo-metal complexes’ ; this is a specialist field within organic chemistry.
Organic chemistry recognises that chelates do occur in nature:-
-haemoglobin is a chelate of iron.
-chlorophyll is a chelate of magnesium .
Beyond these very large molecules, we feel it is true to say that there are no ‘natural chelates’ available for agriculture. This means that chelates for agriculture need to be manufactured leading perhaps to a slightly pejorative profile for both synthetic chelating agents and synthetic chelates.
Edition 4 of our Petition, now incorporated into NOSB’s own timetable, will enable ‘sunrise’ substances such as our chelating agent substances to be studied in the necessary authoritative detail. What is missing, we believe, is a sense of urgency to begin the process:-

- in order to correct long-term omissions by NOP, and
- to insist that the unsupportable positions held by OMRI, using NOP as authority, be officially corrected.

The benefits arising from NOP’s accelerated actions will become evident across a whole range of issues:-

- authoritative versus guesswork
- explicit versus implicit
- permitted instead of forbidden
- useful products available versus not available
- inherent recognition of ‘Solubility Product’ principles from inorganic chemistry
- updating NOP’s scope of inclusions from new science.

We have studied NOP’s recent treatment of GMO substances; that treatment is an excellent example of NOP’s analysis in depth, over a number of years. Because of this, GMO products and processes are documented with appropriate ‘granularity’, while chelating agents and chelates are not.
NOP thus unwittingly foregoes its respected place as world-authority on technical matters in the organic-certification sphere and on organo-metal complexes, thus:-

- organic-certified producers are needlessly denied benefits of modern science in delivering micronutrients to plants.
- the environment is needlessly loaded with quantities of formulated metal salts technically <u>incapable</u> of delivering micronutrients in alkaline soils.
- the environment is adversely affected by increased usage per unit of output of land, labour and energy.

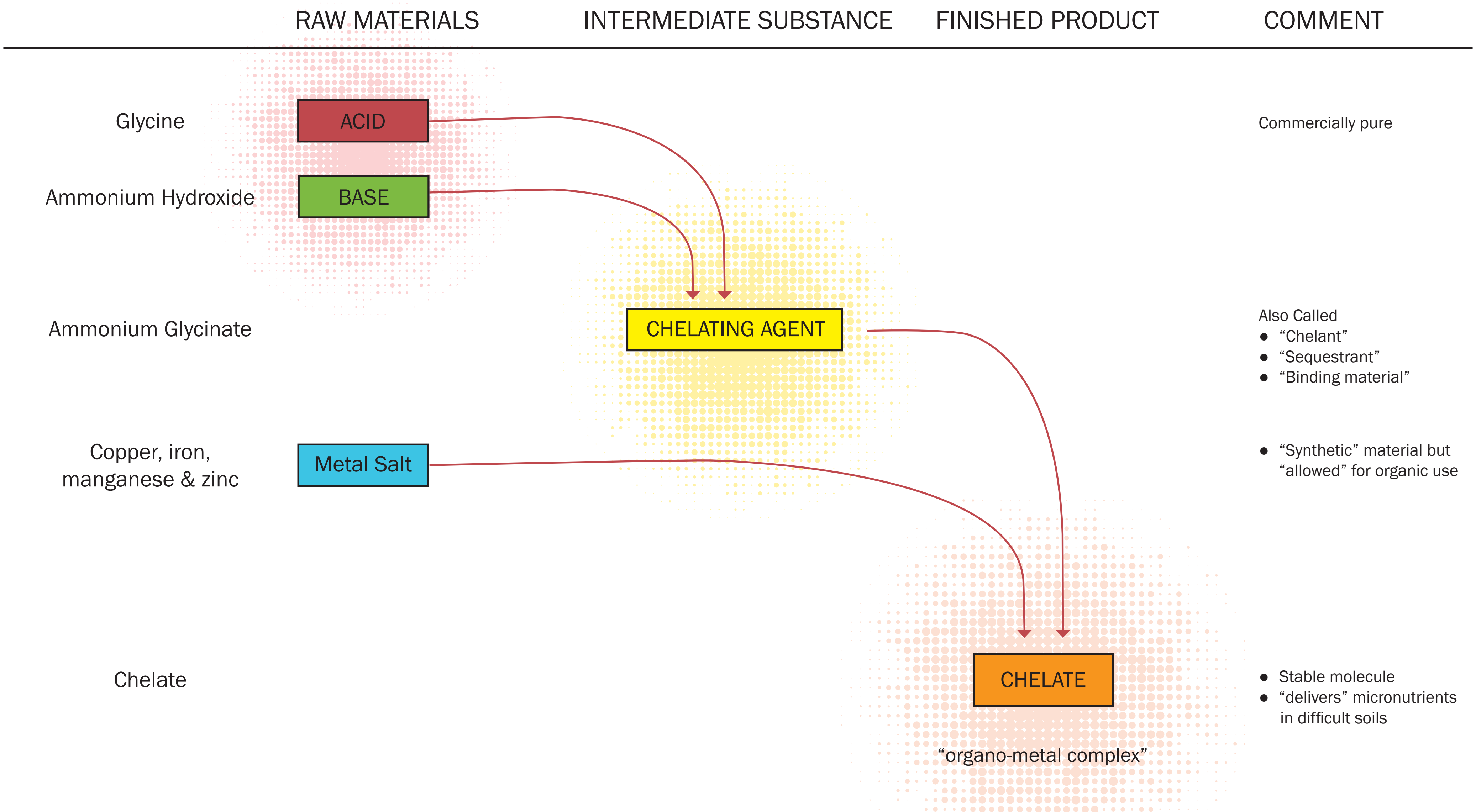
- organic-certified production becomes unsustainable if nutrient replenishment by chelates is forbidden.

We acknowledge prior comment from NOP that NOP is frequently in receipt of requests to alter the priority status of one petition over another. And while our request might be considered in this category, we point out that the intellectual position facing NOP is fundamentally different to that involved with petitions for single substances such as squashed squid or burnt chicken manure. In addition, NOP is silent in a field where it should not be silent and on this ground alone an accelerated consideration of our 2 petitions is warranted.

Our petition might also be validly seen in a completely different light, namely as a petition to reconsider previous decisions on the topic of chelating agents. The policy and procedures manual, on pages 28-29 states that petitions of this nature will be given the highest priority - Priority 1, above all others in the queue of the Reviewing Subcommittee for Crops.

We request your consideration of our petitions in time for decisions at the Fall 2016 Conference.

Diagram 2: The correct 3-stage analysis for Chelate Production



Date: 22/7/15

Diagram 3: Erroneous 2-stage analysis by OMRI for Chelate Production