Association of American Plant Food Control Officials
Terms & Definitions Committee
2018 Summer Annual Meeting Report
Ft. Lauderdale, FL
August 2, 2018

Members Present:
James Bartos, Brian Bowers, Phil Davidson, David Dressler, James Embry, Steve Harley, Falina Hutchinson, Ben Jones, Landen Kidd, Lance Kunneman, Katie Laney, Mark Leblanc, Chad Linton, Steve McMurry, Glenn Murray, Matt Pearson, Eddie Simons, Joe Slater, Robert Tolton, Sharon Webb, Sarah Wilbanks, Nick Young

Industry Liaisons Present:
Ron Alexander, Deborah Allen, David Beaudreau, Brian Birrenkott, Alan Blaylock, Fred Carney, David Chinn, Bill Easterwood, Bill Hall, Michael Hojjatie, Eric Johnson, Robert LaGasse, Logan Leavitt, George Meindl, Gary Orr, Kimberly Papania, John Peterson, Sandy Simon, Jim Skillen, Jamie Staufenbeil, Lisa Strong, Ed Thomas

T&D Membership changes: Removed: Greg Haberkost
Added: Kristin Powell

Facilitator – Lance Kunneman
Scribe – Katie Laney

Committee Objectives

- Review list of tentative terms and definitions previously brought before the committee and vote to retain them in tentative status, move to official status, or delete them.
- Review and discuss new agenda items brought before the committee

Agenda review and approval
The agenda was approved unanimously without modifications. (Matt Pearson/Sharon Webb) *Motion Passed*

Annual Meeting Report Review and Approval (5 minutes) Chair
The Winter Annual meeting report was reviewed and approved. (Robert Tolton/Ben Jones) *Motion Passed*

Overview of Action Items –

<u>Old Business</u> -

Mn-20 Manganese (II) Gluconate – is a manganese (II) ~~Chelate~~ complex of gluconic acid, and is commonly expressed as Mn gluconate.
Motion to table and keep tentative until further information is available (Sharon Webb/Matt Pearson) *Motion Passed*

Fe-25 Iron (II) Gluconate – is an iron(II) ~~Chelate~~ complex of gluconic acid, and is commonly expressed as Fe gluconate.
Motion to table and keep tentative until further information is available (Sharon Webb/Ben Jones) *Motion Passed*

Zn-22 Zinc (II) Gluconate – is a zinc (II) ~~Chelate~~ complex of gluconic acid, and is commonly expressed as Zn gluconate.

Motion to table and keep tentative until further information is available (Sharon Webb/Ben Jones)
Motion Passed

S-13# - Sulfur(S) – Free sulfur (S°) in its elemental form. Sulfur particles that are less than 100µ can oxidize over time and are a source of slow release sulfur. If slow release sulfur is claimed, only the portion that is less than 100µ would be considered slow release.

Membership vote to tentative

Eddie Simons: free and elemental sulfur should be two separate terms. Elemental would be found in the derivation whereas free would be found in the GA.
Bill Easterwood: where would zinc sulfides be?
Bill Hall: under the combined sulfur definition
Toby primbs: agrees with Eddie
James Bartos: how will it be seen if it simply states sulfur:
Steve McMurry: in KY I would consider it elemental sulfur
Bill Hall: how would you define elemental sulfur
Eddie: basically what is stated in the free sulfur definition.
Greg Cunningham: elemental sulfur would be the free sulfur definition. Free sulfur would be: represents the elemental sulfur in the sulfur guarantee.
Sandy Simon: would like to see sulfur remain as sulfur and not free or elemental sulfur
Sharon Web: what method will be used for elemental?
Jim Skillen: isn't there a procedure for timelines on when information is received?
Toby: page 51 in the OP currently has free and combined sulfur which is not currently defined.

S-13# - Elemental Sulfur (S°) – Sulfur existing in its elemental form. It can be sourced from the refining process of crude oil or mined from natural sources. Elemental sulfur is a source of slow release sulfur. Particles of less than 100µm in size have been shown to oxidize over a growing season to become plant available.

T- Free Sulfur – Represents the elemental sulfur in a sulfur sub-guarantee

T- Combined Sulfur – refers to sulfur combined with other elements, primarily by ionic bonds. Combined sulfur can be present in many forms, the most common is sulfate sulfur (SO_4^{2-}). This is the plant available form of sulfur derived from salts containing the sulfate ion SO_4^{2-} and positively charged ions such as those of ammonium and magnesium. Many other forms of combined sulfur can and do exist.

Motion: to accept elemental sulfur, free sulfur and combined sulfur as tentative. (Toby Primbs/Robert Tolton)
Motion Passed

Bill Hall: Will labels need to be changed to include elemental sulfur?
Toby: sulfur would not be accepted in OR they would need to specify

Cu-12 Copper Glucoheptonate – is a copper (II) ~~chelate~~ complex of glucoheptinic acid and is commonly expressed as Cu Glucoheptonate.

Motion to table and keep tentative until further information is available (Sharon Webb/Ben Jones)
Motion Passed

Fe-14 Iron Glucoheptonate – is an iron (III) ~~chelate~~ complex of glucoheptinic acid and is commonly expressed as Fe Glucoheptonate.

Motion to table and keep tentative until further information is available (Sharon Webb/ Ben Jones) *Motion Passed*

Mn-11 Manganese Glucoheptonate – is a manganese (II) ~~chelate~~ complex of glucoheptinic acid and is commonly expressed as Mn Glucoheptonate.

Motion to table and keep tentative until further information is available (Sharon Webb/ Ben Jones) *Motion Passed*

Zn-11 Zinc Glucoheptonate – is a zinc (II) ~~chelate~~ complex of glucoheptinic acid and is commonly expressed as Zn Glucoheptonate.

Motion to table and keep tentative until further information is available (Sharon Webb/ Ben Jones) *Motion Passed*

BSC-4 Available Silicon (Si) – Is the soluble portion of the total silicon in a fertilizer known as monosilicic acid [$Si(OH)_4$].

Motion to delete: (Sharon Webb/Katie Laney). *Motion Passed*

Calcium Lignosulfonate – is a complex of calcium (II) salt of lignosulfonic acid.

Motion to official: (Robert Tolton/Eddie Simons) *Motion Passed*

Michael H: why do we have a II following calcium

Calcium Lignosulfonate - Andy Trinh, H.I.T. Manufacturing (Submitted 7/27/2017, Application on AAPFCO Website)

T-100 Humic Substances – ~~the major organic~~ Constituents of soil organic matter and the aquatic environment, consisting of complex heterogeneous mixtures of carbon-based substances formed by biochemical reactions during the decay and transformation of plant and microbial remains. They are primarily composed of three main fractions, called humic acids, fulvic acids, and humin, which are operationally defined by their solubility in dilute alkali and acid solutions. Sources of humic substances are commercially harvested from terrestrial deposits which include, but are not limited to, Leonardite, oxidized lignite, oxidized sub-bituminous coals, humalite, carbonaceous shales (including humic shale), peat, and sapropel.

Motion to Official and removing "The major organic": (James Bartos/Glenn Murray) *Motion Passed*

Blaylock: the major organic … should be changed to a major….
Ron Alaxander: agreed
Katie Laney: motion to amend the definition by removing "the major organic"

Maleic-Itaconic Copolymer, Calcium Salt – A substance composed of a partial calcium salt of maleic-itaconic copolymer that can be applied to granular urea fertilizers or mixed with liquid ammoniacal nitrogen/urea fertilizers.

Maleic-Itaconic Copolymers – Gary Orr, Verdesian Life Sciences (12-19-17, AAPFCO website)

Motion to keep tentative (Ben Jones/Falina Hutchinson) *Motion Passed*

Phil Davidson: the chemist at home was questioning the method that was used for the product. My recommendation right now is to keep this as tentative.
Gary Orr: thank you for the very specific lists of concerns

Maleic-Itaconic Copolymer, Sodium Salt – A substance composed of a partial sodium salt of maleic-itaconic copolymer that can be applied to granular phosphate fertilizers.

Motion to keep tentative (Ben Jones/Falina Hutchinson) *Motion Passed*

Maleic-Itaconic Copolymer, Ammonium Salt – A substance composed of a partial ammonium salt of maleic-itaconic copolymer that can be mixed with liquid phosphate fertilizers.
Motion to keep tentative (Ben Jones/Falina Hutchinson) *Motion Passed*

Cu-15 – Copper Lignosulfonate Is a ~~n organic~~ complex of the copper (II) salt of lignosulfonic acid. (Official 2000)

Fe-17 – Iron Lignosulfonate Is a ~~n organic~~ complex of the iron (II) salt of lignosulfonic acid. (Official 2000)

Mn-14 – Manganese Lignosulfonate Is a ~~n organic~~ complex of the manganese (II) salt of lignosulfonic acid. (Official 2000)

Zn-17 – Zinc Lignosulfonate Is a ~~n organic~~ complex of the zinc (II) salt of lignosulfonic acid. (Official 2000)
Motion to move Cu-15, Fe-17, Mn-14 and Zn-17 to official: (James Bartos/Ben Jones) *Motion Passed*

N-66 - Ammoniated Calcium Nitrate – Consisting of a hydrated double salt of calcium nitrate and ammonium nitrate having the chemical formula [$5Ca(NO_3)_2 \cdot NH_4NO_3 \cdot 10H_2O$, CAS# 15245-12-2]. Both the granulated or prilled product (15.5-0-0) provide water soluble nitrogen and calcium. *Motion to delete/Passed*

N-67 - Calcium Ammonium Nitrate (CAN) – A nitrogenous fertilizer derived from ammonium nitrate which contains a minimum of 20% calcium material (e.g. calcite or dolomite) and a maximum of 27% nitrogen. The material can be substituted with calcium sulfate (gypsum). It is a source of water soluble nitrogen but not a source of water soluble calcium. It may be granular or prilled. *Motion to delete/Passed*

N-67 - Calcium Ammonium Nitrate (CAN) – A dry fertilizer containing as its essential ingredients only ammonium nitrate and calcium carbonate (e.g. limestone) and/or magnesium carbonate and calcium carbonate (e.g. dolomite), prepared as a homogenous prill or granule, with a maximum combustible material content, expressed as carbon, of 0.4% by weight. The minimum content of such calcium and/or magnesium carbonates in CAN is 20% by weight and their purity level is 90% by weight minimum. *Motion to tentative/Passed*

Below is the current SUIP #6

Mixtures of Ammonium Nitrate and Limestone or Dolomite – These shall not be designated as "ammonium calcium nitrate", "calcium ammonium nitrate" or similar names which imply the presence of either calcium nitrate or ammonium carbonate in such mixture.

SUIP #6 would be amended as follows:

Calcium Ammonium Nitrate (CAN) In the CAN production process, the carbonates are added as a fine powder with a minimum of 80 percent of the powder smaller than 250 microns. Carbonates are either added directly to the CAN granulator or premixed with a concentrated ammonium nitrate solution to produce a homogeneous slurry that is fed into the granulation or prilling section. The solid CAN that is produced contains an intimate homogenous mixture in which each single particle has a similar ammonium nitrate/carbonates ratio.

Mixtures of Ammonium Nitrate and Limestone or Dolomite A physical blend of dry fertilizer grade ammonium nitrate granules or prills with carbonates (e.g., limestone granules or chips) giving the same average chemical composition as CAN does not qualify as CAN under this definition if any of its individual blended constituents containing ammonium nitrate

Motion to delete N-66 and N-67 and move to tentative new definition for Calcium Ammonium Nitrate and changes to SUIP #6. (James Bartos/Joe Slater) *Motion Passed*

Gary Vogen with Yara: the whole purpose was that 1. The dry products have been called that for 92 years, it is a widely used and known term.
Eric: so if we change the name this will create dis-harmony with federal agencies, and confusion
Gary Vogen: definition will encompass the dry products that are being called CAN, unless it is limestone being combined. This is already consistent with the trade association in Canada and Europe

1. **<u>Some more Old Business</u>** –

Soluble Zn, Fe, Cu, Mn – Bill Hall, (Idea submitted 12/17/2016, waiting on details)

Recommendation: Being discussed at the Methods Forum at the end of the Winter Annual Meeting. More details will come during the 2018 Summer Annual Meeting.

Will be presented in lab services. More details will be available for the 2019 winter annual

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Nitrogen Stabilizers needing EPA Clarification? – Chair will facilitate the discussion.
Topic for discussion. The Federal Code of Regulations when it comes to consideration of whether a substance(s) are or are not excluded from the definition of a Nitrogen Stabilizer (and therefore, are or are not regulated as such) four criteria need to be met:

The four criteria are found at the following link. ALL four criteria must be met. If the substance in question fails one criterion, it is not excluded:
https://www.epa.gov/pesticide-registration/nitrogen-stabilizer-products-must-be-registered-under-fifra#substances

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Inoculum Definitions submitted by Working Group – Submitted 7/25/2018. The originals were replaced with the list below.

T- Endomycorrhizal fungal propagules– are the structures of endomycorrhizal fungi that can generate another endomycorrhizal fungal individual. These structures include spores and root fragments colonized by arbuscular mycorrhizal fungi.

T- Mycorrhizal fungi – are fungi that form symbiotic associations between the fungal mycelium and the roots of vascular plants and may act as an extension of the plant root system.

T- Mycorrhiza (plural mycorrhizae) – is a term used to describe the symbiotic association between a mycorrhizal fungi and a plant root.

T- Ectomycorrhizal fungi – are fungi that colonize the outer root zone of woody plants (e.g. conifers, oaks, willows, and eucalypts) without penetrating the root cell and form associations with plants that are characterized by intercellular hyphae. Only the numbers of spores are allowed in product guarantees.

T- Endomycorrhizal fungi [also Arbuscular Mycorrhizal Fungi (AMF)] – any mycorrhizal fungi that form vesicles and Arbuscules in root cells. Also - vesicular arbuscular mycorrhizae (VAM)] are members of the phylum Glomeromycota, one the largest groups of endomycorrhizal fungi. Only the numbers of spores or propagules are allowed in product guarantees.

T- Endomycorrhiza(e) - A mycorrhizal association with intracellular penetration of the host root cortical cells by the fungus as well as outward extension into the surrounding soil.

T- Ectomycorrhiza(e) - Fungal associations characterized by two structural components between the mycelium and the plant root; a sheath or mantle of fungal tissue which encloses a plant root, a intricate inward growth of hyphae between the epidermal and cortical cells called the Hartig net.

T- Beneficial bacteria – are bacteria that promote plant growth, either directly, by colonizing roots and fixing nitrogen, or indirectly, by increasing the availability of nutrients, such as phosphorus, from the soil. Beneficial bacteria are guaranteed by genus and species or strain and an amount, designated as colony-forming units per gram (for dry products) or milliliter (for liquid products).

T- Colony-forming unit (CFU) – is a unit used to quantify the viable cells of bacteria, or yeast in a sample. It is a measure of the number of individual colonies formed when the inoculum is plated using microbiological culture methods appropriate for that organism.

Motion to move the above inoculum terms to tentative: (Toby Primbs/Katie Laney) *Motion Passed*

Working Group: Leif Anderson, Stephanie Garcia(stephanie@mycorrhizae.com), Katie Laney, Nick Young. Marcus Baxter. Ron Alexander. Gregg Cunningham, Vicky Childs, Russ Jones, Michelle Schott,. Clara Mamone, Michael Gans (mgans@pathwaybiologic.com), Glenn Murray, Kyle Ladenburger, Matt Haynes, Janet Reed

Jim Skillen: these do not appear to be terms. Some of them would/could fall under beneficial substances?
Nick: I think the working group would consider these terms, not beneficial substance. These are broader "terms"
Leif: reduces this list down to propagules and CFU's

DMP – Teressa Tubia, BASF (Submitted 4/4/2017, Application on AAPFCO Secure Site)

DMP (3,4-dimethylpyrazole) – is a nitrification inhibitor.

Tabled at Winter Annual 2018 to be reviewed by Lab Services

Terms and Definitions committee will ask lab services to review.

Mineralized Bat Guano – Bob Davis (10/12/17, Secure site of AAPFCO)

P - Mineralized Bat Guano – is phosphate rock that formed as accumulations of bat excrement, altered to variable extent through chemical reactions including dissolution/re-precipitation, hydration, oxidation, and leaching. It contains less than 2% fluorine.

Working Group: Robert(AZ), Nick(CA), Toby(OR), Glenn(Canada), Eddie (WA), Greg Cunningham, Sanford Siegal, Bob Davis, Tim Cartwright, Vicky Childs, Tony Bayt, Marcus Baxter

Working Group Recommendation:

P- Hydroxylapatite - is a naturally-formed phosphate rock ~~mineral~~ with the formula $Ca_5(PO_4)_3(OH)$. The Fluorine content is less than 1%.

Motion to move Hydroxylapatite to tentative: (Nick Young/Toby Primbs) *Motion Passed*

Keith Freeman: phosphate rock is hardened seabird guano, it is mined, and has nothing to do with a bat. This definition here makes no sense. Request that this be re-evaluated and discussed.
Bob Davis: there is a definition for bat guano that was changed, therefore the mineralized bat guano is not allowed. This definition (above) is an accurate description for mineralized bat guano
Joe: there was material that was being sold as bat guano that was phosphate rock.
Toby: there are three types of apatites that is why we added the limitation on the fluorine.

Tripotassium trihydrogen phosphate dehydrate – Julia Ezgilov, ICL (1/3/18, AAPFCO Secure site)

~~Tri~~Potassium ~~tri~~Hydrogen Phosphate Di<u>hydrate</u> ~~dehydrate~~ – Inorganic water soluble fertilizer; Double salt of Monopotassium Phosphate and Dipotassium Phoshphate. It shall contain forty-two (42%) to forty-five (45%) available phosphate and forty-two (42%) to forty-five (45%) soluble potash. <u>(CAS Number 66922-99-4)</u>

Motion to move to tentative: (James Bartos/Matt Pearson) *Motion Passed*

James: there's a little more to it
Kristen Powel: we are fine with calling is potassium hydrogen phosphate dihydrate

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Salt Out Temperature – Michael Hojjatie, Tessenderlo Kerley (1/9/18, Discussion)

Not a formal request at this time, Discussion

Salt Out Temperature (SOT) – The temperature of a liquid fertilizer at which the salt content of the liquid exceeds its solubility. At this temperature, a solid phase begins to form, resulting in a mixture of solid particles and solution. The preferred test for Salt Out Temperature (SOT) determination is by first forming crystals by cooling the solution, and then determining the temperature at which all the crystals re-dissolve into solution.

Tabled at Summer Annual 2018
Michael H: I would like to keep it tabled. It is being discussed in ISO.
Bill Hall: we need to agree on the methodology

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2. **<u>New Business</u>** –

Pronitridine – Ryan Potter, Koch (6/4/18, AAPFCO Secure site)

Pronitridine – is a water-soluble reaction product of urea, ammonium hydroxide, N-cyanoguanidine, and formaldehyde. It is a nitrification inhibitor (CAS Number 1373256-33-7)

Motion to move to tentative once the trade mark is removed: (Joe Slater/Mark LeBlanc) *Motion Passed*

Michael Hojjatie: reaction product? My understanding is that there is no reaction between urea and the additives
Drew Bobeck: It is indeed a reaction product new species are being "created"
James Bartos: do we have a lab method and efficacy with this?
Sharon Webb: we need more efficacy, we were only given one
Greg Shwab: there were several documents submitted

James Bartos: on the lab method it does not have to be AOAC or ISO but it does need to thoroughly reviewed
Sandy Simon:is AAPFCO now regulating "pesticides"
Greg Shwab: there is a term for nitrapyrin we are seeking the same type of "recognition"
Toby Primbs: do we want to add something in the OP about the fact that they are regulated by EPA
Eddie Simons: these products are pesticides on their own, but once they are applied to fertilizer they are no longer labeled as a pesticide.
Joe Slater: if this was to go into the book it would receive a character indicating enhanced efficiency
James Bartos: I would like to see the method in lab services.

Duromide – Ryan Potter, Koch (6/4/18, AAPFCO Secure site)

Duromide – Reaction product of N-(n-butyl)thiophosphoric triamide, urea and formaldehyde, that acts as a urease inhibitor (CAS Number 2093385-47-6).

Motion to table the term: (Robert Tolton/Joe Slater) *Motion Passed*

Drew Bobeck: this is being reviewed by EPA. Similar to the previous term the trademark would be removed
Bill Hall: it would be advised to add these to the ISO "list" of nitrification inhibitor

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Polyacrylamide – James McFadden, Central Garden & Pet (6/6/18, AAPFCO Secure site)

Polyacrylamide – A water-soluble (linear polymer) substance used for soil amendment, wherein the substance is copolymerized and applied in dry granular or emulsion forms to soils. The substance is characteristically anionic, with charge density of 5-40%, a molecular weight range of 8-20 mg/mol, and is made up of variable ratios of acrylamide and acrylic acid monomer. Usage can reduce soil-surface sealing and soil erosion due to irrigation or rain events. As a result, the substance retains mineral nutrients for plant-uptake availability, and improves the efficiency of applied mineral nutrients e.g. Potassium, Calcium, Magnesium, Nitrogen and Phosphorus.

Motion to table the term: (Katie Laney/Mark LeBlanc) *Motion Passed*

James Bartos: what kind of application rates?
James McFadden: the application rates are very low
Nick: why is this definition needed now?
James McFarden: there is disagreement about what it does therefore we thought it should be better defined
Bill Hall: Do you want to make an enhanced efficiency claim? If this was true of polyacrylamideit would be true of clay
James McFarden: yes

Volcanic Ash (Dacitic) – Anne-Laure Guihur, TSG (7-6-18, AAPFCO Secure site)

Volcanic Ash (Dacitic) – Composed of small (< 2 mm) fragments of pumice and other mineral matter deposited during an explosive volcanic eruption, with an overall composition equivalent to dacite, a high-silica volcanic rock formed from crystallized lava. Deposits also may include some larger fragments. It can be used as a source of primary nutrients (such as Potassium) secondary nutrients (such as Calcium and Magnesium), ~~and~~ micronutrients (such as Iron), and beneficial substances (such as Silicon), and as a soil conditioner.

Motion to table the term: (Matt Pearson/Ben Jones) *Motion Passed*

James Bartos: are these all slowly available?
Ron Alexander: for basalt there was data that was submitted about rates of availability
In some states it was not recognized as a source of nutrients
Nick: it seems like a very specific definition for all of volcanic ash, perhaps calling it Dacite and indication it is from volcanic ash
Barry Bickmore this is mostly a glass type material. We cannot simply call this dacite because it is not composed exclusively of dacite

Motion that any working group formed must submit any information 30 days before the meeting for the committee's consideration. (Eddie Simons/Glen Murray) *Motion Passed*

Motion to adjourn: (Katie Laney/Eddie Simons) *Motion Passed*