



January 29, 2021

Amy Williams  
IPDES Rules/Guidance Supervisor  
Idaho Department of Environmental Quality  
1410 N. Hilton  
Boise, ID 83706

Dear Ms. Williams:

Centrisys/CNP along with its partner company Nutrient Recovery and Upcycling, LLC (NRU) are grateful for the opportunity to submit the following comments on the most recent draft version of IPDES User's Guide to Permitting and Compliance Volume 6 – Sewage Sludge and Biosolids.

**Section 5.2 (page 15)** states that struvite "...intentionally formed using advanced wastewater treatment processes to treat phosphorus-rich sidestreams... may be used or disposed of as a Class A EQ biosolid." At this time, Centrisys/CNP and NRU suggest Section 5.2 be altered to remove the guidance that struvite must meet the classification of a Class A EQ biosolid to be beneficially used.

Centrisys/CNP and NRU support the case that struvite produced by recovery technologies like Centrisys/CNP's MagPrex® system is significantly different in physical and biological characteristics from those products which fall under the jurisdiction of 40 CFR Part 503, and as such should not be subjected to the same regulatory requirements as a Class A EQ biosolid product before it can be beneficially used in agriculture, horticulture, or other markets.

Centrisys/CNP and NRU agree with and promote the diligent monitoring of the quality of struvite recovered from water resource recovery facilities (WRRFs) to ensure the safety and well-being of end users, crops, and surrounding environments where the struvite may be land-applied. However, the standard methods used in 40 CFR Part 503 do not allow for accurate testing of struvite and therefore limit the rule's applicability to this material.

Struvite is a crystalline mineral and a sparingly soluble salt containing six water molecules that are integral components of the crystal lattice. The struvite mineral also contains 7.24% ammonium (NH<sub>4</sub>) by weight. When exposed to the appropriate time and temperature criteria required of Class A EQ materials for elimination of pathogenic potential, losses of the crystal waters and ammonium occur. This results not only in a destruction of the struvite molecule and reduction of its value as a nitrogen fertilizer, but also presents a potentially dangerous situation in which ammonia gas enters the local atmosphere.

Furthermore, the loss of the mineral's crystal water - which constitutes 44.08% of the mineral's total weight- combined with ammonia off-gassing results in inaccurately low total solids analysis when the material is subjected to Standard Method 2540 G for the determination of total, fixed and volatile solids. This means struvite tested by the Standard Method may yield total solids results lower than the

regulatory limit for vector attraction reduction. Yet, the crystalline waters accounting for nearly half the weight of the struvite mineral are not liquid water in any sense and present no significant water activity, and therefore should not be accounted as available water for microbial growth. This fact, combined with the inorganic nature of the struvite mineral, and the low amounts of organic materials it precipitates with under proper harvesting conditions, means struvite is itself inhibitory to vector attraction and/or microbial growth.

Given the weight loss implications of exposing struvite to high heat and that the thermal treatment requirement is the most applicable Class A EQ pathogenic reduction solution to the MagPrex process, meeting the pathogenic reduction method requirements as currently written in Part 503 for land application of the material is a physical impossibility without altering the struvite itself. Yet, the recovery of the struvite mineral without doubt yields a valuable product with beneficial applications in agricultural, horticultural, and other industrial markets, offering WRRFs implementing struvite recovery technologies a source of revenue and further helping the industry at large attain sustainable commercial phosphorus recovery from wastewater.

Centrisys/CNP and NRU support [the efforts made by the National Association of Clean Water Agencies \(NACWA\)](#) in encouraging the EPA to clarify the regulatory classification of resources, like struvite, that are recovered from wastewaters but are vastly different from materials falling under the definition of “sewage sludge” and that they are outside of the scope of 40 CFR Part 503. Though the influent to a struvite recovery process would be considered post-digested sewage, the result of the struvite precipitation reaction is primarily an inorganic crystalline material much different in chemical structure, physical characteristics, and biological behavior from the high-organics digest fed into the system.

Supplementary information related to the above discussion can be found in the Centrisys/CNP document titled “Review of Applicability of EPA’s Part 503 Biosolids Rule on Phosphorus Minerals recovered at Water Resource Recovery Facilities”, which accompanied this letter at the time of its submission.

Thank you for the consideration of these comments related to the IPDES User’s Guide to Permitting and Compliance Volume 6 – Sewage Sludge and Biosolids. Should you have any comments, do not hesitate to reach out to me.

Kind Regards,

A handwritten signature in black ink, appearing to read "Gerhard Forstner".

Gerhard Forstner  
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