

Recover nutrient from waste streams – need for process and product criteria

Phosphorus removal from wastewater is of great importance in the EU. INCOPA (the European Inorganic Coagulants Producers Association) support initiatives to evaluate possibilities to recover nutrients from waste streams like municipal sewage water. Without losing sight of the primary aim - to remove phosphorous from waste water streams - we support any downstream approach to recover phosphorous either for direct use as fertiliser or as a raw material in fertiliser production.

- **Rigorous phosphorus removal to avoid eutrophication of water bodies should always be the basis of all further recovery discussions.** We have to keep in mind that the primary objective for a wastewater treatment plant (WWTP) is to treat wastewater, to avoid eutrophication and ensure that pollutants are not spread in the receiving waters.

If we focus on phosphorus removal, the WWTP first of all needs to remove nutrients as effectively as possible. We cannot accept that less efficient removal technologies are used just because phosphorus recovery is required. The introduction of a successful recovery technology should therefore allow for the best possible performance in removing dissolved phosphates from the waste water stream and guarantee a recovered phosphorous compound of the highest possible purity and quality.

- **Full implementation of the Urban Wastewater Directive 91/271/EEC and the Sewage Sludge Directive 86/278/EEC would enable more phosphorus to be captured and recovered, resulting in an improved water environment and more phosphorous available for recycling.** Many member states have even more stringent demands than the directives removal criteria, so we know it is possible to remove more than 90% of the phosphorous from the wastewater and make it available for recycling. However, not all member states are fulfilling the wastewater directive's removal criteria and hence phosphorous is wasted and could cause environmental problems.

INCOPA encourage the implementation of the wastewater directive in the whole European Union and by doing this, the amount of raw material available for phosphorus recycling will increase.

- **There is a need to develop a clear definition of phosphorous availability for plants that should apply to all products.** The solubility of phosphorus in different phosphorus sources does not show the true uptake figures since it also depends on soil properties. In the proposed fertilizer regulation there are some solubility methods described that can be used to determine the availability of phosphorus in the fertilizer. Unfortunately, none of the solubility methods are good enough to give valid results as there are so many other parameters that affect the phosphorous availability. For instance, soil quality, plant type, climate, the presence of mycorrhiza and how long the fertilizer has been in the soil affects the availability.

We recommend an independent scientific assessment of the common methods to determine phosphorous-plant availability resulting in precise guidance to evaluate different products.

- **The vast majority of phosphate is separated by precipitation with iron or aluminium salts. INCOPA therefore requests that these phosphate salts should also be considered for inclusion in the CMC.**

The collection of different other inorganic phosphates compounds, such as iron and aluminium compounds, in one unified CMC “Inorganic phosphate compounds” will avoid favouring one single process technology and encourage the development and introduction of alternative recovery technologies that will most likely provide higher phosphorus recovery rates with lower process and investment costs.

In conclusion, coagulants represent a sustainable wastewater treatment solution and an efficient phosphorus removal option which can help secure Europe’s supply of phosphorus by operating as an essential part of the recovery schemes.

INCOPA (the European Inorganic Coagulants Producers Association) is a Sector Group of Cefic, the European Chemical Industry Council. INCOPA’s membership includes 31 producers of inorganic coagulants with about 80 production units representing more than 85% of the European production capacity. The member companies produce either aluminium or iron salts which are used for water treatment, paper manufacturing, in the cement industry and fertiliser production. The carbon footprint of the industry is very low. One reason is that the raw materials used in coagulant manufacturing are generally recycled materials from other industries.

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