



*This submission is made by the Cefic (the European Chemical Industry Council) Sector Groups concerned by phosphorus and its derivatives jointly with Fertilizers Europe:*

*CEEP: phosphates for detergent and technical cleaning applications*

*PAPA: food-grade phosphates and purified phosphoric acid*

*IFP: inorganic phosphates for animal feed applications*

*Fertilizers Europe: European fertiliser industry*

## **Response to EU consultation on (Non Energy) "Raw Materials" policy**

Phosphates are essential in food production (agricultural fertilisers, feed supplements for farm animal and fish production), pharmaceuticals, cosmetics, toothpastes, human food components (including inorganic antimicrobial additives and preservatives, baking agents, processing agents ...), and a wide range of industrial and chemical applications (including electronics, metals preparation and treatment, detergency and cleaning applications, ceramics, glues, chemistry ...).

However, they are a non-renewable and, because phosphorus is a biologically essential element, non-substitutable resource, of which there are few reserves in the EU.

Phosphorus is thus both a vital raw material for both EU agriculture and industry. Medium to long-term global supply and reserve issues thus justify its inclusion in EU strategic raw material policies. Furthermore, the localisation of reserves and trade issues justify its inclusion in such policies in the short to medium term. Both these approaches justify proactive policies to develop phosphate recovery and recycling, in order to render the EU less dependent on imports and to prepare a long-term sustainable phosphorus stewardship at the European level.

*Q2 : Do you see any additional raw material that should be considered as critical?*

**Our industries wish to express our surprise that phosphorus is not included in the list of 14 elements identified as strategic for the European Union's future and sustainable development.**

Phosphorus is absolutely non substitutable in many applications, in particular those related to agriculture, food production and processing, because it is an essential element for all living organisms: man, animals and plants.

In man, phosphorus is necessary for human health: phosphorus compounds make up the structure of bones and teeth and are fundamental to the transfer of energy within cells, and thus to all body functions, from thought through to motion. Phosphorus is an essential element in DNA (genetic material) and in many proteins. Phosphorus is naturally present in foods and is taken into the body as phosphates. The minimum intake requirement for adults is approximately 0.8 g P/day but the actual dietary uptake is generally closer to 2-3 g P/day in modern Europe. In plants, phosphorus plays an essential role in photosynthesis and all energy recovering processes. Phosphates are thus one of the main nutrients in almost all agricultural and garden fertilisers, because they are crucial for plant growth.

Phosphate inputs are thus essential to ensure agricultural productivity, and the capacity of modern agriculture to feed Europe's population depends on phosphate fertiliser inputs.

Agriculture has always been dependent on phosphorus stewardship. Even before the element was identified, medieval land contracts allowed tenants to take the crops from the land but obliged them to return animal wastes (to recycle the irreplaceable phosphorus) and monasteries recycled sewage phosphates through stepped series of fish ponds. Today's fertiliser industry allows an efficient use of phosphorus at a larger scale, derived from mined phosphate rock, and the element remains essential for food production at the levels achieved today.

Availability of adequate phosphate resources is thus essential, both for a range of industrial activities, and to feed Europe's population.

It is currently not clear what levels of technically exploitable phosphate reserves exist at the world level, because of a recent lack of research resulting from an unstable market and geopolitical factors. For further information on this, we refer to competent organisations such as <http://phosphorusfutures.net/peak-phosphorus> or the recent summary at <http://www.scientificamerican.com/article.cfm?id=phosphorus-a-looming-crisis>

What is however certain is that:

- Both existing and expected reserves are concentrated in a limited number of global regions, with significant geopolitical stability issues
- In the medium-long term, reserves will inevitably be depleted and production become increasingly expensive, with significant knock-on effects for food production and food prices
- Phosphate rock reserves in the EU are limited (the only significant reserves are located in Finland, and are small compared to Europe's phosphorus consumption), declining and without signs of anticipated new discoveries, making Europe highly and increasingly dependent on imports
- The EU does have significant potential secondary sources of phosphorus (sewage, animal wastes, food and other industry wastes), which today are largely, and increasingly, unused (see below, cf. Q17)

*9. Please identify trade distortive measures (i.e. export restrictions) concerning raw materials that in your view should be tackled.*

Over the past 5-10 years, the raw material ("green" or merchant grade phosphoric acid) for the EU technical phosphates industry, and basic fertiliser component phosphates (for example, merchant grade mono- and di-ammonium phosphates) have undergone major price instability, partly as a result of supply – demand differences resulting from variations in demand in world agriculture (the main consumer of phosphates), investment bottlenecks in phosphate rock mining and "green" phosphoric acid production, but also largely artificially because of changes in export policy in China. China has ranged from exporting below-cost technical phosphates (related to non market energy and raw material prices in China) to putting a specific export tax on phosphates to prevent export and retain phosphates in China for local agriculture needs.

**We believe that the Commission should monitor such unfair price and trade mechanisms and look to establish mechanisms to neutralise such artificial trade obstacles**

*17. Improvement of the regulatory framework conditions inside the EU - Do you think of any other avenues which should be followed by the Commission?*

In parallel to continuing the efforts made by the EU fertiliser industry to improve efficiency and stewardship of phosphate fertiliser, it is important to promote and support recovery and recycling of phosphates.

The EU has significant secondary resources of phosphorus in municipal sewage, animal wastes, food industry and other waste streams. A number of pilot and full-scale initiatives have been launched to recover and recycle phosphates from waste streams (eg. from sewage sludge and other secondary sources at Thermphos International plant, Vlissingen The Netherlands; pilot trials in a number of sewage works in Italy, Spain, Netherlands, and recently Ostara / Severn Trent in the UK ...). However, at present, only a tiny fraction of this resource is recovered directly (as a specific phosphate product, for recycling either as a fertiliser or in the phosphate industry), and a decreasing fraction is partly re-used through agricultural spreading of sewage sludge or manure.

Agricultural re-use of nutrients in sewage is under increasing pressure, as farmers and consumers are increasingly unwilling to accept agricultural re-use of sewage sludge, and because of the increasing urbanisation and concentration of populations. Increasing concentration of livestock production also reduces the effective recycling of phosphorus in manures.

It must be remembered that in many cases, sewage sludge and manure are spread not according to plant needs (to optimise P re-use) but up to “limit levels” which are defined rather to limit accidental run-off.

**We believe that EU legislation, in particular agricultural waste management and domestic water treatment legislation, should be modified to include objectives for recovering and (effectively) recycling a significant % of phosphorus.**

This is a no regret policy, as recycling of phosphorus can be combined with recycling of other nutrients (nitrogen, carbon ... thus saving energy) where agricultural spreading is adapted to plant needs, or with improved nutrient removal (phosphate, nitrogen) in municipal sewage works, thus helping address water quality issues in receiving waters.

We refer the Commission to the assessment of this question carried out by the UK ACHS (February 2009): “Review of the feasibility of recycling phosphates at sewage treatment plants in the UK”

[www.defra.gov.uk/environment/quality/chemicals/.../phosphates-review.pdf](http://www.defra.gov.uk/environment/quality/chemicals/.../phosphates-review.pdf)

and to the Sweden Interim Target 2005-2015 “By 2015 at least 60% of phosphorus compounds present in wastewater will be recovered for use on productive land. At least half of this amount should be returned to arable land.” (Sweden’s environmental objectives see <http://www.naturvardsverket.se/en/In-English/Menu/Swedens-environmental-objectives--for-a-sustainable-society/Swedens-environmental-objectives/The-system-of-environmental-objectives/The-national-environmental-objectives/A-Good-Built-Environment/>)



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