

## Consultative Communication on the Sustainable Use of Phosphorus

**Q1 – Do you consider that the security of supply issues for the EU in relation to the distribution of phosphate rock are a matter of concern? If so, what should be done to engage with producing countries in order to tackle these issues?**

**A1** – Yes, there are serious problems looming. The obvious supply source for Europe is Morocco/West Sahara, but this region is not the politically most stable one. There have already been recent serious disturbances in the North of Africa and these should not spill over to Morocco. The West Sahara region by itself is one of political concern.

It is of utmost importance to build strong ties between the EU and Morocco and help to maintain peace and political stability in and around the broader region of economic importance. It must be recognized that Morocco possesses about 70% of the world supply of prime quality phosphates, controlled by OCP or, in fact, the king of Morocco.

An action to consider is to stimulate OCP to take a commercial interest in Europe. A wonderful change was and still may be to take the (bankrupt) Thermphos site in the Netherlands and continue its operation. The Dutch government will be interested.

**Q2 – Is the supply and demand picture presented here accurate? What could the EU do to encourage the mitigation of supply risks through i.e. the promotion of sustainable mining or the use of new mining technologies?**

**A2** – The picture is painted very accurately. In the worst scenario it may even be on the conservative side. Namely, if the progression in the world's population growth continues and if a fair share of that population is becoming somewhat wealthier (mainly by consuming more food, including meat), the supply problem may already surface after two generations. Remedies at that time will be brutal. Action should be taken far earlier.

**Q3 – Do you consider that the information on the worldwide supply and demand of phosphate rock and fertilizer is sufficiently available, transparent and reliable? If not, what would be the best way to obtain more transparent and reliable information at EU and global level?**

**A3** – The public at large is unaware of the seriousness of the phosphorus problem and so are our politicians. The problem is also difficult to digest because of our current wealth in food. Even if the EU can secure for the coming few decades an adequate supply of phosphate fertilizer the problem remains. Initiating full recycling processes will take decades as it did for installing electrical networks, sewage systems, etc. Moreover, setting up such processes in heavily populated areas will have very different signatures from those in rural areas. Awareness should be front and center. It has taken decades to convince the public that an energy transformation is needed. The continuous public focus should be equally strong on phosphate recycling.

Investing in research to improve the technology for phosphorus recycling and supporting companies that recycle phosphorus in the EU should be taken into consideration by the European institutions.

***Q4 – How should we handle the risk of soil contamination linked to phosphorus use in the EU?***

**A4** – This issue will become far more prevalent when the supplies are under pressure, meaning that lower qualities of phosphate rocks will be mined. For health reasons the only solution is to ensure that the quality stays high. The consequence will be that the price of satisfactory quality of phosphate fertilizer will increase far more rapidly than suggested by the currently accepted/projected world supplies of phosphate rock.

***Q5 – Which technologies have the greatest overall potential to improve the sustainable use of phosphorus? What are the costs and benefits?***

**A5** – All phosphate detergents should be prohibited. Phosphate mining should be made more effective. More careful and continuous monitoring of the soil can be linked to specific fertilizer combinations. The use of 2<sup>nd</sup> and 3<sup>rd</sup> generation biomass for generating energy must take into account the recycling of phosphates from ashes.

Recognize that the sensitivity in the market will remain. It has been argued that the peak in phosphate price in 2008 was related to the supply of sulfuric acid needed for extracting the fertilizer from the phosphate rock. The sensitivities of interlinked natural resources will remain and may grow when oil is slowly running out. Oil is a source of sulfur used in the manufacturing of sulfuric acid.

***Q6 – What should the EU promote in terms of further research and innovation into the sustainable use of phosphorus?***

**A6** – Not mentioned in the report is the commercial use of phosphorus products. Phosphorus containing compounds are crucial for many catalysts to do their function. Yet their synthesis is not using green/sustainable technologies. It would be great to also stimulate academicians and industries to 'green' the use of phosphorus compounds. This in itself will bring about an awareness as the relationship with waste versus essential ingredients for food are easily made.

Because currently recycled phosphates are not useable as fertilizer, much effort is needed to achieve this objective. Also the recycling of human excrement, both liquid and solid is far below the desired level, again needing much effort to improve the yields. Further, a major effort is needed to avoid the waste of phosphorus from burning biomass for energy. Finally, it should be prohibited that industrial phosphorus waste such as phosphine oxides are simply disposed of or incinerated. Also these should be recycled.

***Q7 – Do you consider that the available information on the efficiency of phosphorus use and the use of recycled phosphorus in agriculture is adequate? If not, what further statistical information might be necessary?***

**A7** – No, the information is not adequate. Also the general public needs to be repeatedly informed for agricultural policies to be accepted. Statistical information is important for all to see where we are coming from and what lies ahead.

**Q8 – How could the European Innovation Partnership on "agricultural productivity and sustainability" help to take forward the sustainable use of phosphorus?**

**A8** – The initiative is a very important first step. Long term and steady policy with tangible, achievable targets are important for public acceptance. European distribution of human excrement, both liquid and solid (manure) waste, animal (bone) waste, food waste, etc. joint with their on- and off-site phosphorus recycling, including of biomass, should be front and center in bringing the awareness about.

**Q9 – What could be done to ensure better management and increased processing of manure in areas of over-supply and to encourage greater use of processed manure outside of these areas?**

**A9** – The bankruptcy of Thermphos is a tremendous waste in this context. They had just started an important recycling process. Industry should be encouraged and stimulated to fully engage in the endeavor to recycle phosphates from manure to reusable fertilizers and to generate phosphorus products from phosphates that are not reusable for fertilizers.

**Q10 – What could be done to improve the recovery of phosphorus from food waste and other biodegradable waste?**

**A10** – It is important to change legislation to use animal waste (meat, bones) in an effective and justifiable manner and avoiding potential health hazard by recycling the phosphorus (e.g. from ashes). Another important aspect is to make the general public aware (in a repetitive manner) of the tremendous waste of food (food stores, restaurants, and households) to change habits.

**Q11 – Should some form of recovery of phosphorus from waste water treatment be made mandatory or encouraged? What could be done to make sewage sludge and biodegradable waste more available and acceptable to arable farming?**

**A11** – Of course, any form of legislation, tax incentives (penalties), and subsidies would help to stimulate industries (and municipalities) to clean water and sewage sludge. The activities in Sweden and the Netherlands ('Ketenakkoord Fosfaatkringloop') are very encouraging. It also prevents expenditures in cleaning water after eutrophication has taken place, in unclogging sewage drains, etc.

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