



20 January 2017, Brussels

**To: TNO, E. Rietveld, T. Bastein,
leading the consortium reviewing the Critical Raw Material List 2017 for EC DG Growth**

Copy: Milan Grohol, DG GROW

Subject: Critical Raw Material list review process, concerning phosphate rock and phosphorus

Dear Mr. Bastein and Mr. Rietveld

Thank you for inviting the European Sustainable Phosphorus Platform (ESPP) to the workshop on Critical Raw Materials (CRM) in Brussels at 7 November 2016.

ESPP represents a diverse group of stakeholders working on sustainable management of nutrients, with a focus on phosphorus. However we were surprised that no other stakeholders were present at this workshop for the phosphorus session: fertiliser industry, chemicals industry users of phosphorus (P4), agriculture and food sector, etc. The excel files circulated prior to the meeting were confidential. Consequently, these stakeholders are de facto not included in the consultation nor able to comment.

During the workshop we gave input to the raw materials phosphate rock (P-rock) and phosphorus (P4) and we are also returning to you, separately, wording comments and factual correction input to the proposed "factsheet" text on phosphate rock (your email of 27-12-2016, our reply 18/1/2017).

This letter aims to provide more structural input and considerations: we have the following five general comments, based on the excel documents circulated (send date 18-10-2016):

1. **Content of excel files:** Unfortunately ESPP cannot comment on the results or figures because the basic information is not visible (e.g. data and calculation of the 17% "recycling rate" which was also discussed during the workshop). Additionally, we cannot see if comments already made in our previous ESPP input to the RMSA study by Deloitte (send date 22-09-2015, and attached) are dealt with or not. Also it is not possible for us to involve and consult our members and stakeholders without access to the data and calculations.
2. **Criticality of P4:** ESPP notes that in the circulated draft Excel documents the criticality result for phosphorus P4 (white phosphorus) is high and higher than phosphate rock. This confirms that this specific raw material should be seriously considered for addition to the CRM list in addition to phosphate rock and/or P-in-any-form. We would like to highlight that presently the EU is 100% dependent on imports for P4. According to our information the import is completely or nearly completely from only two sources Vietnam (dependent on cheap electricity from China, which may not continue in the long term because supply is for political reasons only) and Kazakhstan (with logistic issues because transport is across Ukraine).



Please note that the other countries mentioned as an import source in your excel sheet are not producers or exporters of P₄, possibly just re-trade. In the past, Europe had Thermphos, Netherlands, as a P₄ production plant, but in 2012 this company went bankrupt and the plant was closed. P₄ is the non-substitutable, necessary raw material for a wide range of industry sectors including a range of chemicals, agro-chemicals, electronics, fire safety, pharmaceuticals. We recommend to include in the CRM list, in addition to phosphate rock, also white phosphorus (P₄). This is in line with magnesium for which two different specific forms are included in the CRM list: not because magnesium the element is rare, but because supply of these specific forms is critical for certain sectors of EU industry.

3. **Applications of P₄:** the list of applications of P₄ is very incomplete in the excel file circulated. P₄ has many important and high economic value applications in industry. See the list of applications in ESPP note of 08-04-2015 to DG GROW concerning white phosphorus (attached). Additionally, please see the summary and presentations of our recent conference about Phosphorus stewardship in industrial applications, Brussels, 01-12-2016 (<http://www.phosphorusplatform.eu/P-in-industry> and [SCOPE Newsletter n° 123](#)).
4. **Economic added value:** for phosphate rock the list of food and non-food applications and their economic value appear to be incomplete. Phosphorus is not substitutable for its principal uses in food production (fertilisers and animal feeds), although improvements in overall agricultural use efficiency are possible including via recycling. The economic value that should be taken into account is therefore not only the direct value of the phosphate products (fertiliser and inorganic feed additives -and, independently, the industrial applications). But also the added value of the whole production-processing-consumption chain of agricultural biomass, including agriculture itself, the food processing industry, supermarkets food sector retailing, animal foods¹.

ESPP proposes that at least the following economic sector values should be included:

- a) all agricultural production, including crops, livestock, bioenergy crops, because these are largely all dependent on P fertilisers, which are based on phosphate rock;
- b) all food processing (agri-food) industries;
- c) food retail and restaurants;
- d) mineral fertilisers;
- e) animal feed additives (the second agricultural application of phosphates);
- f) drinking water treatment (see article in a ESPP [SCOPE Newsletter n°119](#) on tonnes P used for this in UK);
- g) Plus the relevant sectors of chemical industry and technical uses of P₄ (see above), because this comes from phosphate rock originally, for example:
 - food additives;
 - fire safety (flame retardants, fire extinguishers, wildfire fighting chemicals);
 - pharmaceuticals;
 - electronics (e.g. etching microchips) and lithium ion batteries.

¹ In theory this special nature of phosphorus is in principle also true for micronutrients such as zinc and copper (also CRMs). However these micronutrients are used in relatively small amounts in agriculture and for these elements the highest fraction is used in industry. Consequently substitution is a viable solution to mitigate the risks in supply and economic value, at least in the short term.



5. **Future supply insecurity:** resource security for phosphate rock should look also at potential future increasing concentration of this critical raw material. To be specific, Morocco has presently 76% of world P-rock reserves and Morocco's share of world P-rock supply is expected to increase considerably because of exhaustion of accessible USA reserves as well as reduction in export from China because of internal demand (Cooper et al. 2011²). ESPP recommends to take the risks of future dynamics into account.

Thank you for taking our input into consideration. We are looking forward to your response and to be invited to help you further improve your analysis. If you have any additional questions let us know.

Sincerely yours,

Ludwig Hermann, ESPP President

Dossier c/o: Chris Thornton, Kimo van Dijk

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² Cooper, J., R. Lombardi, et al. (2011). "The future distribution and production of global phosphate rock reserves." Resources, Conservation and Recycling 57: 78-86.