Beat: Health

Peak Phosphorus: the science of prophecy

Lack of P: true or false?

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USPA NEWS - The Mayans said things would end in 2012. Anxious computer specialists said it would be 2000. Now, certain thinkers have told us that our species will face a serious threat from 2033. The unlikely agent of this new apocalypse: lack of fertilizer. Do we need to be concerned?

Human capacity for fiction

“Peak Phosphorus“, like “Peak Oil“ before it, foretells that resources of phosphate rocks, which we extract and convert into vital fertilizers, will soon run out. The “˜peak´ is the date at which maximum phosphate production will occur, after which point reserves will begin to be depleted. This will severely diminish the global capacity to produce crops for food, with dire consequences for the world economy.

We have a predisposition to seeing narrative where it does not exist, to finding patterns in white noise ““ faces in clouds (paraidolia) (1). This combined with confirmation bias (2) makes for a powerful mechanism of invention. Reinforced by an urge to make sense of and control the unruly universe we find ourselves in, we are left vulnerable to concepts that catch our attention or that conform to and confirm already existing beliefs.

Prophecies of destruction

Those in support of the theory that our end is coming soon as a result of phosphate mineral depletion base this belief resolutely in science and data. But the quality of this data and the efficacy of the scientific methods involved has been seriously called into question.

Proponents of “Peak Phosphorus“ claim that, given existing phosphate reserves, current rates of population growth, compounded by human flourishing in developing parts of the world, the rate at which we will deplete reserves is going to exponentially increase. As we are dealing with a limited, finite resource, complete depletion will therefore occur rapidly.

Researchers used a “˜Hubberts Linearisation model´ to predict over what timescale this will happen and when the peak would be. They concluded that it had already happened. Then, when the phosphate production numbers picked up again and started to cause the theory problems, like many before them, they edited their prophecy.

The current prediction for the date that we will start to have problems is apparently 2033. But, not unlike the static predictions made for the oil industry, this is probably subject to change.

Dispelling the prophets

Scientists have increasingly called into question the accuracy of “Peak Phosphorus“ predictions, based on a variety of issues. Primarily, that the model used, the Hubbert curve, requires a complete knowledge of Ultimate Recoverable Reserves (URR). In place, of this, Peak Phosphorus proponents used only presently catalogued reserves. They also did not adjust for newly discovered reserves, previously impractical ones, better technology allowing lower concentrations of phosphate to be mined, etc.

A number of experts have also drawn attention to problems with the numbers. The International Fertilizer Development Center stated (3) in 2010 that “there is no indication that phosphate production will peak in the next 20-25 years or even within the next century...[G]lobal resources of phosphate rock...will be available for several hundred years.“ Figures from the U.S. Geological Survey now put potential exploitable resources of phosphorus at enough to last for over 1,100 years at the world´s current consumption rate.

In place of a “˜peak´, scientists such as Michael Mew judge that a Phosphorus Plateau is more likely (4). Mew considers that as supply becomes strained and prices increase, greater care and attention will be given to both phosphorus extraction and farming techniques.

Along with improvements in mining technology, recycling, and efficiency, spurred by higher phosphate prices, we will see a sustained period of flat production levels. He expects that this impetus will lead to innovations in crop varieties and agricultural approaches, reducing the amount of phosphate required to produce the same quantity of food. There will be a peak, but afterwards production will remain steady.

If we look at the example of oil, we see that concerns that oil will run out have been outstripped by concern that using it damages the environment. The fear in the 1980s that oil would peak has been largely forgotten, as technological change has given humanity access to resources not previously known about. It is more than reasonable to believe that the same will be true for most of our other resources, including phosphorus.

1: https://www.bbc.com/future/article/20140730-why-do-we-see-faces-in-objects
2: https://www.psychologytoday.com/us/blog/science-choice/201504/what-is-confirmation-bias
3: https://ifdc.org/2010/09/22/ifdc-report-indicates-adequate-phosphorus-resources-available-to-meet-global-food-demands/
4: https://www.businessinsider.com/doomsday-will-peak-phosphate-get-us-before-global-warming-2013-7?IR=T

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