

Who Cares about Phosphate? Final group activity

Instructions – Step 1 (15 minutes)

As a group, list all of the stakeholders involved in extraction and use of phosphorus (mainly as phosphorus fertilizer). These are the stakeholders that you listed with your first group. For example, even though they are not human, the *organisms in Tampa Bay* are a stakeholder.

Pick five of these stakeholders that you would like to explore in more detail. Write these in the first column of the attached worksheet. All other stakeholders can be listed at the end of the worksheet.

Next, if you assume that phosphorus fertilizer is applied liberally on all farm fields and lawns in the United States, how does the extraction and use of phosphate fertilizer affect the five individual stakeholders you listed? Some stakeholders will benefit, some may be harmed, and some may experience both benefit and harm. Write your answers in the second column on the worksheet.

Your answers should be specific and use the information from the activity you did in your first groups. A specific answer will include the following: *What happens that is harmful or beneficial? Why does this happen? Under what conditions does this happen? In what part of the fertilizer lifecycle does this happen?*

Instructions - Step 2 (15 minutes)

As a group, suggest an alternative: What could be done to reduce phosphate fertilizer use or otherwise minimize harm (and maximize benefit) to the stakeholders? You can pick from the list below or write your own. Write a paragraph describing your plan and a brief explanation of why you picked it.

Pick one (or a combination of two) alternative(s) from this list:

- Stop mining/processing phosphorus in the United States and import fertilizer instead.
- Use manure and composted plant material as fertilizer instead of using chemical fertilizer.
- Capture phosphorus from (human) wastewater and use this as a fertilizer.
- Require (or strongly recommend) that fertilizer users test the phosphorus levels in the soil and only apply the amount of fertilizer (if any) needed.
- Change farming so that a variety of crops are grown and animals are raised in the same area.
- Change farming to use no-till agriculture, where fields are not plowed; instead, seeds are grown amid the previous years' dead plants.
- Other. Suggest your own.

Instructions - Step 3 (10 minutes)

Finally, fill out the third column of the table on the worksheet to summarize how the stakeholders will benefit or be harmed by the adoption of the alternative solution your group proposed in Step 2.

Group Worksheet: Who Cares about Phosphate?

Stakeholder – STEP 1	Explain the benefits or harm to this stakeholder based on current phosphorus extraction and use (see instructions) – STEP 1	Explain how and why adopting your alternative plan might change how phosphate extraction and use impacts each stakeholder – STEP 3

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List all other stakeholders here. (You only need to give specifics for five of the stakeholders.)		