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FOR ENGINEERING AND SCIENCE

## A pHish Tale

### Year

2001

### Description

This case highlights potential dilemmas encountered by postdoctoral fellows in a research setting. Should a scientist release incomplete data to an environmental group so they may work to prevent further environmental damage, or hope for the best during the five-year EPA funded project that will provide conclusive data? It also explores scientists social responsibilities and public perception of scientific data.

### Body

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## Part 1

Tom is a postdoc who is participating in a government-funded project to study the pH levels in a series of lakes scattered throughout an area of 100 square miles. The study was conducted because the numbers of fish in some of the lakes had been dropping, and the EPA wanted to know what was causing the fish to die. Data from Tom's study indicate that a number of lakes have alarmingly low pH levels, although some have normal pH levels. High acidity (low pH) is known to be deadly to many fish species.

Because of the large area affected, Tom believes that the contamination must be traveling through the air. He is almost certain that the low pH levels are due to acid rain caused by emissions from power plants in the surrounding region. However, the data from his study are not sufficient to show that the power plant emissions are causing the lakes' acidity. Another five-year project is planned to determine the causes of the acidity.

Unfortunately, some fish species that are sensitive to pH levels have died off in the lakes. If pH levels continue to fall, most fish will disappear, harming not only the ecosystem, but the local economies of some lakeside villages, where fishermen rely on the fish from the lakes for their livelihood. Tom is concerned that if something is not done about the pollution source immediately, the lakes may suffer permanent damage.

One of Tom's long-time friends is a member of a local environmental group that wants the power plants to move. His friend suggests Tom meet with Susan, the leader of the group, but Tom is not sure whether it is appropriate to become involved in local politics, especially since data to determine the actual cause of the pollution have not yet been collected.

Tom and Richard, a senior research scientist on the study, are publishing their findings in a national journal; it is unlikely that the locals will see this publication. They have discussed the next phase of the research, and Tom knows that Richard also believes that the power plants are the most likely cause of the contamination. Tom decided to discuss his concerns about the fish with Richard and ask his advice on whether he should help the environmental group by speaking out against the power plants.

When Tom talked to Richard, Richard expressed concern about any involvement with the environmental groups. "Tom," he said, "I've seen how many of those

groups operate. They have no use for science unless it fits into their agenda. Many of the so-called leaders of those groups just want to get their name in the newspaper."

"But Richard, I know some of these people, and they're not like that," Tom replied.

"I don't know, Tom. We have some responsibility as scientists to be objective and stay neutral in such a debate. If we start to take sides, our work will be questioned, and we risk not being taken seriously. I've known a few scientists who have become activists, and if they hadn't already established a strong reputation in their field, their reputations among scientists were often tainted by their perceived subjectivity. Sometimes, their 'cause' was even harmed and their activism backfired because their work was painted as biased. What happens if you speak out against the power plants and we find out that there is another cause for the acidity?"

Tom replied, "I see what you mean. I don't want to be seen as biased. Still, I feel I have some responsibility to try to save the fish for the sake of the people that rely on them and for the ecosystems that support them. Do you really think that there might be another cause for the acidity?"

"No," said Richard. "I think it's pretty unlikely. Still, your reputation may be damaged whether you're wrong or not."

Tom thanked Richard for his advice, but he still felt that he had some responsibility to the fish and the fishermen.

## **Discussion Questions**

1. What are Tom's options? What should he do?
2. Does he have an ethical responsibility to become active in the debate and try to help save the lakes?
3. Does he have a responsibility to the scientific community to maintain his objectivity and avoid the risk of harming the public's attitude toward scientific research?

# Part 2

Tom has decided that his moral responsibility to help save the lakes is more important, and he gets in touch with Susan. Susan tells Tom that the public doesn't understand the subtleties of scientific research. She says that if they are going to be able to make a difference, Tom will have to present the preliminary study results in the broadest terms and brush over the uncertainties. Susan wants to say that they have a scientific expert familiar with the lakes who is convinced that the power plants are causing the pollution and that something must be done soon or the lakes will suffer permanent damage. Tom is uncomfortable with such strong language, but Susan won't back down.

## Discussion Questions

4. What should Tom do?
5. In light of the uncertainty involved in the research to date, should Tom now back away from being involved in the environmental group?
6. Should Tom try to find a way to communicate the uncertainties involved in determining the causes of the low pH levels to the public?

## Notes

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