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FOR ENGINEERING AND SCIENCE

# Barking Up the Wrong Tree? Industry Funding of Academic Research

## Year

1998

## Description

This case discusses issues such as the conflict of interest that arises from the impact of private industry funding, management of a research lab, student-mentor/ post-doc workplace relationships, and integrity of the researcher.

## Body

### [Scenario 1](#)

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Nellie Shepherd is a graduate student at a large Midwestern university working with a group of graduate students and post-doctoral fellows in the lab of Dr. Thomas Katz. The primary focus of the lab group's research is various aspects of the fate, transport and biological effects of 1,3,5-trimethyltriazinetriene (TTT) in aquatic systems. TTT is a by-product of several chemical manufacturing processes and is extremely difficult to remove from wastewater. Katz, a well-established scientist, is internationally known for his work on TTT. Much of his current research is funded on an annual basis by a consortium of chemical companies that generate wastewater containing TTT. Katz has the highest funding level and best equipped laboratory in

the department; however, his students find him distant and communication difficult.

For her dissertation research, Nellie is attempting to determine what environmental factors have contributed to the decline of native fish species downstream from the point at which wastewater from several chemical companies is released into the Missouri River. In addition to TTT, the wastewater contains numerous other substances, including dipropyl phthalate (DPP). At present, no regulatory levels have been established for TTT or DPP; for a variety of reasons, there is much public interest in TTT whereas DPP has been largely ignored.

In a field survey, Nellie found large differences between enzyme levels in fish collected upstream and downstream from the area where wastewater enters the river, with the lowest levels in fish collected closest to the source of wastewater. Short-term experiments conducted by Katz's lab several years earlier did not indicate that native fish species were adversely affected by exposure to TTT, although enzyme levels were not analyzed. An extensive literature search yielded a series of papers indicating that exposure to DPP decreased enzyme levels in several European fish species and linking low enzyme levels to increased susceptibility to disease. Nellie is concerned that DPP, rather than TTT, is the cause of the biochemical changes she has observed and designs a series of simple lab experiments to determine whether exposure to DPP decreases enzyme levels in native fish species.

Nellie arranges a meeting with Katz in which she summarizes the papers she has found showing effects of DPP similar to those she has observed. She also describes the experiments she feels are needed to determine if DPP decreases enzyme levels. Katz tells her that she is barking up the wrong tree and insists that she limit her research to the effects of TTT because that is what the lab's funding is designated for. Nellie is surprised by Katz's response to her proposed experiments. When she tries to pursue the issue, she is abruptly dismissed.

Nellie discusses her meeting with Katz with several members of the lab group. Everyone she talks to feels that her concerns about DPP are valid. Several weeks later, one of the post-docs tells her that Katz confided in him that he didn't want Nellie to "open up another can of worms for the chemical industry." Nellie knows that loss of the chemical industry funding would be devastating to the lab. She realizes that she can probably complete her dissertation without addressing DPP. However, if DPP has caused the decline of native fish species, this issue needs to be

addressed quickly because several of the fish species are considered to be on the verge of extinction. Nellie has the materials and reagents she needs to conduct the experiments evaluating DPP.

## **Discussion Questions**

1. Should Nellie proceed with the experiments evaluating DPP?
2. What issues are involved in such a decision?

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# **Scenario 1**

Nellie decides to obey Katz's instructions. She does not include an evaluation of DPP in her work. She refocuses her dissertation topic, limiting it to the effects of exposure to TTT. Results of her work support the preliminary experiments and indicate that TTT has no major adverse effect on the fish species studied. Katz asks Nellie to include an evaluation of the effects of elevated water temperature on fish enzyme levels. Discharge of water used for cooling by an electrical power plant has caused a 3° C increase in the average annual water temperature of the Missouri River in Nellie's study area.

## **Discussion Questions**

3. Has Nellie compromised her integrity by omitting DPP from her research?
4. In what way is the analysis of this case changed by Katz's request that temperature be evaluated?

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# **Scenario 2**

Nellie proceeds with the experiments evaluating the effects of DPP on two fish species. Her results indicate that exposure to DPP results in decreased enzyme levels.

Now that she has the additional data, Nellie recalls Katz's irritation when she initially suggested evaluating DPP. Because of her apprehension, she decides not to tell Dr. Katz about these experiments and proceeds with her dissertation research as described in Scenario 1.

## **Discussion Questions**

5. By conducting the experiments and not divulging the results, has Nellie compromised her integrity more than in Scenario 1?
6. Was she wrong to have conducted these experiments using resources obtained from chemical consortium funds earmarked for research on DPP?

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## **Scenario 3**

Nellie decides to tell Katz the results of the experiments with DPP. He becomes irritated when she admits that she has conducted the experiments, and he informs her that if she wishes to continue her investigation of DPP, she will need to find another source of funding and another laboratory to work in.

## **Discussion Questions**

7. Is Katz's behavior appropriate? Note: The research of some of the other graduate students in the lab group involves compounds other than TTT.
8. What is the primary source of Nellie's conflict? How might this conflict be avoided?
9. What constraints on a graduate student's research are appropriate? What constraints are not
10. Is it appropriate for Katz to accept funding that is restrictive (either explicitly or implicitly)?
11. Is it appropriate for Katz to allow Nellie to select a dissertation topic that could potentially conflict with funding constraints? How much latitude should a student be allowed in choice of a research topic?

12. Would Nellie's behavior be considered differently if she were working for a consulting firm with Katz as her supervisor rather than as a graduate student? How might public perception of her work change in this setting?

## **Notes**

Brian Schrag, ed., *Research Ethics: Cases and Commentaries, Volume 2*, Bloomington, Indiana: Association for Practical and Professional Ethics, 1998.

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