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# Dealing with a Costly Error

## Author(s)

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## Description

What to do when old friendship gets in the way of decision making.

## Abstract

This case is one of thirty-two cases which address a wide range of ethical issues that can arise in engineering practice provided by the Center For the Study of Ethics in Society, Western Michigan University.

## Body

## I. Getting Acquainted

Carl Lawrence was somewhat nervous on his first day at work. Although a very good student, he had relatively little practical experience in engineering. Yet, here he was, supervisor of several acid and caustic distribution systems. Plant manager, Kevin Rourke, gave Carl a tour of the facilities and introduced him to the workers he would be supervising. Carl was pleasantly surprised when he was introduced to Rick Duffy. Rick and Carl's older brother were best friends in junior high school, and Carl had

always liked Rick.

Rick had moved away from Emerson City in the 10th grade, and the Lawrence family lost track of him. Rick told Carl that he went into the service right after high school. After that he returned to Emerson City to take a job at Emerson Chemical as a lead operator. Now married with two small children, Rick is anxious to move ahead. So, he is enrolled in night classes at the local university.

When Kevin Rourke finished showing Carl around the facilities, he asked Rick to show him how the distribution systems worked. As Carl and Rick moved from the acid to the caustic distribution system, Carl noted a striking difference. The acid distribution piping has spring loaded valves that close automatically when not in use. To pump acid into a remote receiving tank, a pump switch must be activated at the remote location. The pump switch has to be held on by the operator while the tank is filling. The penalty for propping the switch on by other means is immediate dismissal. In contrast, no similar precautions are taken with the caustic system.

One of the two caustic tanks in Carl's area is equipped with a high-level alarm. The other, located in a less used area of the building, is not. Both tanks have vents piped to trench drains in the floor that are connected to the publicly owned wastewater treatment works (WTW). Because of the many low volume caustic use points throughout the area, the distribution system is kept pressurized by an air-operated diaphragm pump. So, if there is no caustic demand, the pump expends no energy. But it immediately acts to restore the line pressure if any valve is opened or if there is a leak in any of the pipes.

Carl asks Rick why the caustic system is so different. Rick shrugs and says, "I don't really know. It's been this way at least as long as I've been here. I suppose it's because the acid distribution system is used so much more." Carl then asks if the lead operators have written procedures for filling the caustic tanks. Rick says he's never seen any--nor has there been any review of the practice during the four years he has been an operator. "Are you satisfied with this setup?" Carl asks. "Well, I don't have any problems with it. Anyway, that's somebody else's concern, not mine. I suppose they don't want to put out the money to change it," Rick replies. "Don't fix the wheel if it's not broken seems to be their attitude."

Should Carl talk with Kevin Rourke about the distribution systems, or should he simply accept things as they are?

## II. A Problem

[Several months later.] Carl Lawrence is alarmed by Kevin Rourke's urgent, early afternoon message: "All supervisors immediately check for open caustic valves. Supply tank is empty. Pump still running--either an open valve or a leak. Emergency order for caustic supply has been made." Carl immediately tells his lead operators to make a check. They report that everything is in order. However, by mid-afternoon it is evident that the problem is still unsolved. The supply tank is steadily emptying even though apparently all the valves are closed and no leak has been discovered. At 4:00pm a lead operator who has just arrived for the afternoon shift notices an open valve in a seldom used area of the facility. Carl had forgotten that no one was working on that side of the building during the early afternoon. So, the seldom used valve wasn't checked. Now, however, Carl remembers that Rick Duffy was assigned that area during the previous shift.

The valve is immediately shut off. Then Carl phones Rick: "Rick, you left the C-2 valve open; and we've got a real problem on our hands. We've lost a lot of caustic down the drain. What time was it when you opened the valve?" Rick answers, "Carl, I don't remember. I've been real tired all day. Pulled an all-nighter getting ready for my exam tonight, and I was just wiped out when I went to work. I think I turned it on near the end of my shift, but I just can't be sure. I can't believe I forgot to turn it off!" Rick pauses and takes a deep breath, "Man, I can't afford trouble right now. Jan's pregnant again, and I've got another semester to go."

Now that Carl has located the problem, what should he say to his plant manager, Kevin Rourke? Should he acknowledge responsibility for failing to have C-2 checked earlier? Should he identify Rick as the one who left the valve open?

## III. Taking Action

Kevin Rourke is relieved to learn that the problem is an open valve rather than a leak. No repairs would be required. However, another decision is necessary. Since it is not known how long the valve was open, there is some uncertainty about how much caustic waste has been released and how much, if any, has reached the publicly owned wastewater treatment works (WTW). It is estimated that it takes 6 hours for waste from Emerson to arrive at WTW. If Rick turned on the valve shortly

before he left work, there would still be time to arrange for a supply of acid to be delivered to WTW to counter the higher pH count that the caustic waste would cause. Even if he turned it on earlier, sending a supply of acid to WTW would help control the harm.

Kevin knew that the pH level at WTW had been on the high side of its normal range before the pH meter that monitors the pH of waste arriving at WTW went out of service. He also knew that the meter would be still be out of service until late evening. So, even if the caustic waste were to raise the pH to an unacceptable level, it would be difficult, if not impossible, to trace the problem to its source.

What should Kevin do? If he notifies the proper outside authorities, how candid should he be in estimating how much caustic waste has been released?

## **IV. Kevin Rourke's Response**

Kevin Rourke notifies the local fire station, which then alerts WTW. Kevin also immediately arranges for a large supply of drums of hydrochloric acid to be taken to WTW in case it is needed. Although the entire incident is quite costly, Kevin is convinced he has acted correctly: "If I had done nothing, it's possible nothing terrible would have resulted. But it would have been a very risky thing. If the caustic overflow had killed the micro-organisms that digest the sewage, WTW would have had to report the out-of-compliance discharge to the state environmental agency. If it ever got out that we were responsible--and that we tried to cover it up--we would have really paid through the nose; and I'd probably end up losing my job. Our public reputation would really suffer, too."

Total costs to Emerson: Replacement costs for an estimated several hundred gallons of wasted caustic; 30 drums of hydrochloric acid to be used if needed; \$60,000 to modify the caustic distribution system.

Evaluate Kevin Rourke's actions and supporting rationale from the standpoint of: a) WTW; b) Emerson management; c) Emerson stockholders; d) other industries in the area that use WTW; e) local citizens. Do you think Kevin Rourke did the right thing?

## **V. Rick Duffy**

Rick Duffy clearly was negligent. What should Carl Lawrence do about it? If propping open a pump switch of an acid tank warrants immediate termination, should Carl fire Rick for leaving open the caustic valve? To what extent, if any, should Carl be influenced by his friendship with Rick? By his knowledge that Rick needs to keep his job?

## **VI. Carl Lawrence**

Although he realizes Carl Lawrence was not responsible for leaving the valve open, Kevin Rourke is upset that it took Carl's unit so long to discover the problem. Why, he wonders, didn't anyone check C-2 in this emergency situation? He also wonders what he should say to Carl--and whether he should take any action against him. Discuss.

## **VII. Kevin Rourke Again**

Kevin Rourke decides he should have a serious talk with Carl Lawrence. He expresses his disappointment at the quality of Carl's initial investigation: "You have to tighten up your unit so that this kind of thing never happens again. You can start by giving whoever left the valve open his walking papers." Carl is relieved that Kevin apparently is not taking any action against him. But he is unhappy at the idea of firing Rick. What should Carl do? Should he cover for Rick and tell Kevin he doesn't know who left it open?

## **VIII. Rick Duffy Again**

The next morning Carl Lawrence is mulling over what he is going to say to Rick Duffy when he hears a knock on his door. He is surprised to see Rick, and he is even more surprised at what Rick says: "I know I really put you in a tough spot. I'm really sorry I let you down. I want you to know that I quit this morning, so you don't have to fire me. I've already applied for another job. Look, Carl, I know I shouldn't be asking you for any favors, but I need a couple of references. Can I count on you?"

What should Carl say to Rick? What should he do? If he writes a letter of recommendation, what should he say about Rick's work performance?

## **IX. A Phone Call**

Carl was surprised to receive a phone call about Rick Duffy just two weeks after the accident. "We've received a letter of recommendation from you concerning Mr. Richard Duffy," said the voice on the other end. "He's applied for a job in one of our safety areas. He's one of the finalists for the job. Your letter says he was a good lead operator, a reliable worker, easy to get along with, and so on--no negatives at all. I'm just calling to see if there's anything you might want to add that would help us make our final decision." What should Carl say?

## **X. Another Company**

Imagine a similar accident occurring on the same day as Emerson's at another company in the area. Although there is enough spill to exceed safe limits at WTW, by the time the problem is discovered and corrected at Nurrevo Ltd., Emerson has already rectified the problem at WTW. Since Kevin Rourke didn't know precisely how much caustic waste Emerson spilled, he had no way of knowing that he was cleaning up Nurrevo's spill as well. Should Nurrevo inform WTW of its accident and offer to share costs with Emerson? Discuss.

## **XI. Andrea Smith**

Andrea Smith is Kevin Rourke's counterpart at Nurrevo. She is having a meeting with her immediate superior when Fred Barnes brings her the bad news. She immediately concludes that she will have to report the problem to WTW. But Andrea's superior tells her not to act too hastily: "Let's make sure we have the facts straight first. Go back to your unit and see what else you can find out about this. Meanwhile I'll make some inquiries." Fifteen minutes later Andrea discovers the problem is serious enough that she is convinced she should contact WTW. However, at that moment her superior steps into her office and says, "It's okay, Andrea. You don't have to do anything--it's all taken care off." Later she learns how it was "taken care off."

Somehow her superior learned of the Emerson Chemical spill and that Kevin Rourke's actions actually solved both problems at once. So, he decided Nurrevo would simply keep its problem quiet.

Andrea Smith likes her job very much. She has worked hard to get there, and she would like to advance within the company. But now her superior has posed a problem. She definitely disapproves of his cover-up. She wonders how far up the organizational ladder she would have to go to find someone who would agree with her. Would anyone? So she wonders what she should do.

## **Notes**

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