

ENGINEERING ETHICS

The Aberdeen Three

Department of Philosophy and Department of Mechanical Engineering

Texas A&M University

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Introduction To The Case

The Aberdeen Proving Ground in Maryland is a U.S. Army facility where, among other things, chemical weapons were developed. The "Aberdeen Three" Case involved three high-level civilian managers at the Aberdeen Proving Ground in Maryland. All three managers were chemical engineers in charge of the development of chemical weapons. In 1989, the three engineers were indicted for a criminal felony, tried and convicted of illegally handling, storing, and disposing of hazardous wastes in violation of the Resource Conservation and Recovery Act (RCRA). The violations occurred between 1983 and 1986.

Instructor Guidelines

The issues covered in the student handout include the importance of an engineer's responsibility to public welfare, and the need for this responsibility to hold precedence over any other responsibilities the engineer might have. Also discussed are the responsibilities of a manager/engineer to look after the safety and well being of his/her subordinates. A final point is the fact that no matter how far removed an engineer may feel from society and the environment, all of our actions have an impact and are subject to the same guidelines that affect others in our field. This point is especially important in this case because of the criminal violations of the Resource Conservation and Recovery Act.

A videotape presentation of the case by Jane Barrett, the prosecuting attorney, is available from

Geo-Centers, Inc.

1220 12th SE, #300

Washington, DC 2003-3723

Phone 202-544-7277

A suggested method of presenting this case to the class involves giving the students the handout a day or two before showing the videotape. After showing the videotape, the next class period could be spent discussing the case, using the enclosed overheads to review the roles of the people involved, the key dates, and the key issues. Listed below are some sample questions to stimulate class discussion

Questions for Class Discussion

- 1) What could the three engineers have done differently?
- 2) What, if anything, could their subordinates have done differently?
- 3) What, if anything, could their superiors (i.e., the Army command) have done differently?
- 4) Should the Justice department have done anything differently?
- 5) Do you think the judge's sentencing of the "Aberdeen Three" was too lenient or too harsh? Why?
- 6) What do you (the students) see as your future engineering professional responsibilities in relation to preserving or protecting the environment?

Essay #7, "Engineers and the Environment," appended at the end of the case listings will be found directly pertinent in preparing to discuss these issues. Also, essays #1 through #4 will have relevant background information for the instructor preparing to lead classroom discussions. Their titles are, respectively: "Ethics and Professionalism in Engineering: Why the Interest in Engineering Ethics?;" "Basic Concepts and Methods in Ethics;" "Moral Concepts and Theories;" and "Engineering Design: Literature on Social Responsibilities Versus Legal Liability."

Recommended Overheads

- 1) Organizations/People Involved
- 2) Key Dates
- 3) Key Issues

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ORGANIZATIONS/PEOPLE INVOLVED

ABERDEEN PROVING GROUND - U.S. Army facility, which employed the following three civilians:

CARL GEPP - Manager at the Pilot plant. He answered to Dee and Lentz.

WILLIAM DEE - Developed the binary chemical weapon. He headed the chemical weapons development team.

ROBERT LENTZ - In charge of developing the processes that would be used to manufacture chemical weapons.

U.S. JUSTICE DEPARTMENT

JANE BARRETT - Prosecuting attorney

KEY DATES

1976 - Congress passes the Resource Conservation and Recovery Act.

September 17, 1985 - Acid tank leaks into Canal Creek.

March 26, 1986 - Pilot Plant shut down.

June 28, 1988 - Gepp, Dee, and Lentz indicted.

January - February 1989 - Trial of the "Aberdeen Three"

May 11, 1989 - "Aberdeen Three" each sentenced to 1000 hours of community service and three years probation.

KEY ISSUES

HOW DOES THE IMPLIED SOCIAL CONTRACT OF PROFESSIONALS APPLY TO THIS CASE?
WHAT PROFESSIONAL RESPONSIBILITIES DID THE THREE ENGINEERS NEGLECT, IF ANY?

The Aberdeen Three - Environmental Issues

Student Handout - June, 1992

Synopsis

The "Aberdeen Three" Case involved three high level civilian managers at the Aberdeen Proving Ground in Maryland. All three managers were chemical engineers in charge of the development of chemical weapons. In 1989, the three engineers were indicted for a criminal felony, tried and convicted of illegally handling, storing, and disposing of hazardous wastes in violation of the Resource Conservation and Recovery Act (RCRA). The violations occurred between 1983 and 1986.

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Details of the Case

In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA). The purpose of the act was to provide technical and financial assistance for the development of management plans and facilities for the recovery of energy and other resources from discarded materials and for the safe disposal of discarded materials, and to regulate the management of hazardous waste.¹

This 1976 act expanded the Solid Waste Disposal Act thereby authorizing state program-and-implementation grants for providing incentives for recovery of resources from solid wastes, resource conservation, and control of hazardous waste disposal. In addition to establishing the EPA Office of Solid Waste, requiring state planning and a ban on open dumping of solid hazardous wastes, RCRA also implemented criminal fines for violations of the open dumping or hazardous waste disposal guidelines.

Aberdeen is a U.S. Army facility where, among other things, chemical weapons are developed. All three engineers involved in the case were experts in the chemical weapons field, and Dee was responsible for developing the binary chemical weapon. The U.S. Army has used the Aberdeen Proving Ground to develop, test, store, and dispose of chemical weapons since World War II. Periodic inspections between 1983 and 1986 revealed serious problems at the facility, known as the Pilot Plant, where these engineers worked. These problems included

- flammable and cancer-causing substances left in the open
- chemicals that become lethal if mixed were kept in the same room
- drums of toxic substances were leaking. There were chemicals everywhere - misplaced, unlabeled or poorly contained. When part of the roof collapsed, smashing several chemical drums stored below, no one cleaned up or moved the spilled substance and broken containers for weeks.²

The funds for the cleanup would not have even come out of the engineers' budget. The Army would have paid for the cost of the cleanup. All the managers had to do was make a request for the Army clean-up funds, but they made no effort to resolve the situation.

When an external sulfuric acid tank leaked 200 gallons of acid into a nearby river, state and federal investigators arrived and discovered that the chemical retaining dikes were unfit, and the system designed to contain and treat hazardous chemicals was corroded and leaking chemicals into the ground. The three engineers maintained that they did not believe the plant's storage practices were illegal, and that their job description did not include responsibility for specific environmental rules. They were chemical engineers, they practiced good "engineering sense," and had never had an incident. They were just doing things the way they had always been done at the Pilot Plant.

On June 28, 1988, the three chemical engineers, Carl Gepp, William Dee, and Robert Lentz, now known as the "Aberdeen Three," were criminally indicted for storing, treating, and disposing of hazardous wastes in violation of RCRA at the Aberdeen Proving Ground in Maryland after about two years of investigation. Six months following the indictment, the Federal Government took the case of the "Aberdeen Three" to court. Each defendant was charged with four counts of illegally storing and disposing of waste. In 1989, the three chemical engineers were tried and convicted of illegally storing, treating, and disposing of hazardous waste. William Dee was found guilty on one count, and Lentz and Gepp were found guilty on three counts each of violating the Resource Conservation and Recovery Act. Although they were not the ones who were actually performing the illegal acts, they were the managers and allowed the improper handling of the chemicals. No one above them knew about the extent of the problems at the Pilot Plant. They each faced up to 15 years in prison and up to \$750,000 in fines, but were sentenced only to three years probation and 1000 hours of community service. The judge based his decision on the high standing of the defendants in the community, and the fact they had already incurred enormous court costs. Since this was a criminal indictment, the U.S. Army could not assist in their legal defense. This case marked the first time that individual federal employees were convicted of a criminal act under the Resource Conservation and Recovery Act.

Discussion of the Ethical Issues

The actions of the three engineers bring to mind an important question. These engineers were knowledgeable about the effects of hazardous chemicals on people and the environment (they developed chemical weapons), so why were they so seemingly unconcerned about the disposal of hazardous chemicals? It is interesting to note that even after they were convicted the three engineers showed no apparent remorse for their wrongdoing. They kept insisting that the whole case was blown out of proportion, and that they had done nothing wrong. All containers of hazardous chemical have labels which state that the chemicals must be disposed of according to RCRA requirements, yet the three engineers maintained that they had no knowledge of RCRA. Perhaps the best answer to this question is that they did not hold their responsibilities to the public as engineers as high on their list of priorities as other responsibilities they held.

To better understand the responsibility of the engineer, some key elements of the professional responsibilities of

an engineer should be examined. This will be done from two perspectives: the implicit social contract between engineers and society, and the guidance of the codes of ethics of professional societies.

As engineers test designs for ever-increasing speeds, loads, capacities and the like, they must always be aware of their obligation to society to protect the public welfare. After all, the public has provided engineers, through the tax base, the means for obtaining an education and, through legislation, the means to license and regulate themselves. In return, engineers have a responsibility to protect the safety and well-being of the public in all of their professional efforts. This is part of the implicit social contract all engineers have agreed to when they accepted admission to an engineering college. According to the prosecution, the three engineers involved in the Aberdeen case placed a low priority on this responsibility to society, and instead emphasized the importance of their military mission.³ The first canon in the ASME Code of Ethics urges engineers to "hold paramount the safety, health and welfare of the public in the performance of their professional duties." Every major engineering code of ethics reminds engineers of the importance of their responsibility to keep the safety and well being of the public at the top of their list of priorities. Although company loyalty is important, it can, in some circumstances be damaging to the company, if the employee does not think about the long-term effects of his actions on the company.

It is a sad fact about loyalty that it invites...single-mindedness. Single-minded pursuit of a goal is sometimes delightfully romantic, even a real inspiration. But it is hardly something to advocate to engineers, whose impact on the safety of the public is so very significant. Irresponsibility, whether caused by selfishness or by magnificently unselfish loyalty, can have most unfortunate consequences.⁴

The engineers were also unaware that their experiments and their handling of waste products had social impact, even though they considered themselves to be far removed from the outside world. The leaking of sulfuric acid into Canal Creek quickly disproved their claim of being removed from the outside world. No matter how far an engineer feels removed from society, he still has an effect on it, even if it is an indirect one. Even though the Pilot Plant was located on a military base, it still had to follow the RCRA guidelines, regardless of its military mission.

In addition to their responsibilities to society in general, the "Aberdeen Three" also had responsibilities to their subordinates, which they also overlooked. It was one of these employees who originally went to the press and exposed what was going on at the Pilot Plant. Employees were working under conditions where chemicals were dripping down from leaky pipes above them, and in violation of RCRA rules. Employees who had no hazardous materials training were ordered to handle and dispose of chemicals about which they had little or no knowledge. Whether or not there were rules for the training of employees who would be handling hazardous materials, the three engineers had a responsibility to those employees to inform them of what they were dealing with and how to handle the waste materials properly.

The three engineers convicted in this case were well aware of the dangers the chemicals they worked with on a daily basis posed to society, yet they allowed their unfounded feelings of separation from the outside world and their misguided loyalty to their military mission to lessen the importance they placed on their responsibility to society as engineers. The prosecutor in the case had this to say about the Aberdeen Three: "These are experts in their field. If they can't be expected to enforce the law, then I'm not sure who can."⁵

Annotated Bibliography

Curd, Martin and May, Larry, "Professional Responsibility for Harmful Actions," **Module Series in Applied Ethics**, Center for the Studies of Ethics in the Professions, Illinois Institute of Technology, 1984.

This essay explores the grounds on which professionals should be held responsible for harms caused by their actions. Most examples used concern engineers, designers, and architects involved in real-life cases from tort law.

Davis, Michael, "Thinking Like An Engineer: The Place of a Code of Ethics in the Practice of a Profession," **Philosophy & Public Affairs**, Vol. 20, No. 2, Spring 1991, pp. 150-167. (see also, "Explaining Wrongdoing," **Journal of Social Philosophy**, Vol. 20, Numbers 1&2, Spring/Fall 1989, pp. 74-90.

In these lucid essays, Davis argues that "a code of professional ethics is central to advising individual engineers how to conduct themselves, to judging their conduct, and ultimately to understanding engineering as a profession." Using the now infamous Challenger disaster as his model, Davis discusses both the evolution of engineering ethics as well as why engineers should obey their professional codes of ethics, from both a pragmatic and ethically-responsible point of view. Essential reading for any graduating engineering student.

Nesteruk, Jeffrey, "The Ethical Significance of Corporate Law," **Journal of Business Ethics**, Vol. 10, No. 9, September 1991, pp. 723-727.

In this article, the focus is corporate decision-making structures, and conflicts regarding particular role obligations. Nesteruk argues that as laws change, so do the roles in the corporate hierarchy, thereby creating problems in the legal scholarship of corporate social responsibility.

Robinson, Carlton C., "Safety--An Important Responsibility," **ITE Journal** (Institute of Transportation Engineers), Vol. 61, No. 7, July 1991, pp. 21-24.

This article discusses safety as a critical ingredient for transport engineers and their managers.

Schapker, Dennis R., "Tort Reform and Design Professionals," **Journal of Professional Issues in Engineering**, Vol. 116, July 1990, pp. 258-265.

Discusses the battle over tort reform and how it has affected the engineering profession since 1980. It is a call for engineers to get involved in the debate.

Stone, Christopher D., "**Where the Law Ends: The Social Control of Corporate Behavior**," New York: Harper & Row, 1975.

This book looks at corporate moral behavior; in particular, how law is a reaction to misdeeds in business behavior. Stone provides a thorough, albeit negative analysis of corporate ethics, and provides recommendations for promoting ethical behavior. Although written in 1975, the book still holds value for the student interested in social responsibility versus legal liability issues.

Tomlinson, Don E., "Choosing Social Responsibility Over Law: The *Soldier of Fortune* Classified Advertising Cases," **Business and Professional Ethics**, Vol. 9, Nos. 1&2, Spring-Summer 1990, pp. 79-96.

This article discusses the ethics of the **Soldier of Fortune's** guns-for-hire advertisements that resulted in several murders across the United States.

Notes

1 Resource Conservation and Recovery Act of 1976. P.L. 94-580. Abstract.

Lengthy congressional document which outlines the planning and implementation of stricter guidelines for the handling, treatment, storage and disposal of environmentally hazardous materials. Challenging to read.

2 Weisskoph, Steven. *The Washington Post Magazine*. "The Aberdeen Mess" January 15, 1989. p. 55.

Article that went to print just as the case was going to trial. Focuses on the personal side of the case, and comes across as being biased in favor of the defendants. 8 pages.

3 Videotape of prosecuting attorney Jane Barrett.

4 Baron, Marcia. *The Moral Status of Loyalty*. Illinois Institute of Technology: Center for the Study of Ethics in the Professions, 1984, p. 9.

One of a series of monographs on applied ethics that deal specifically with the engineering profession. Provides stimulating discussions both for and against loyalty. 28 pages with notes and an annotated bibliography.

5 Weisskoph, p. 57.