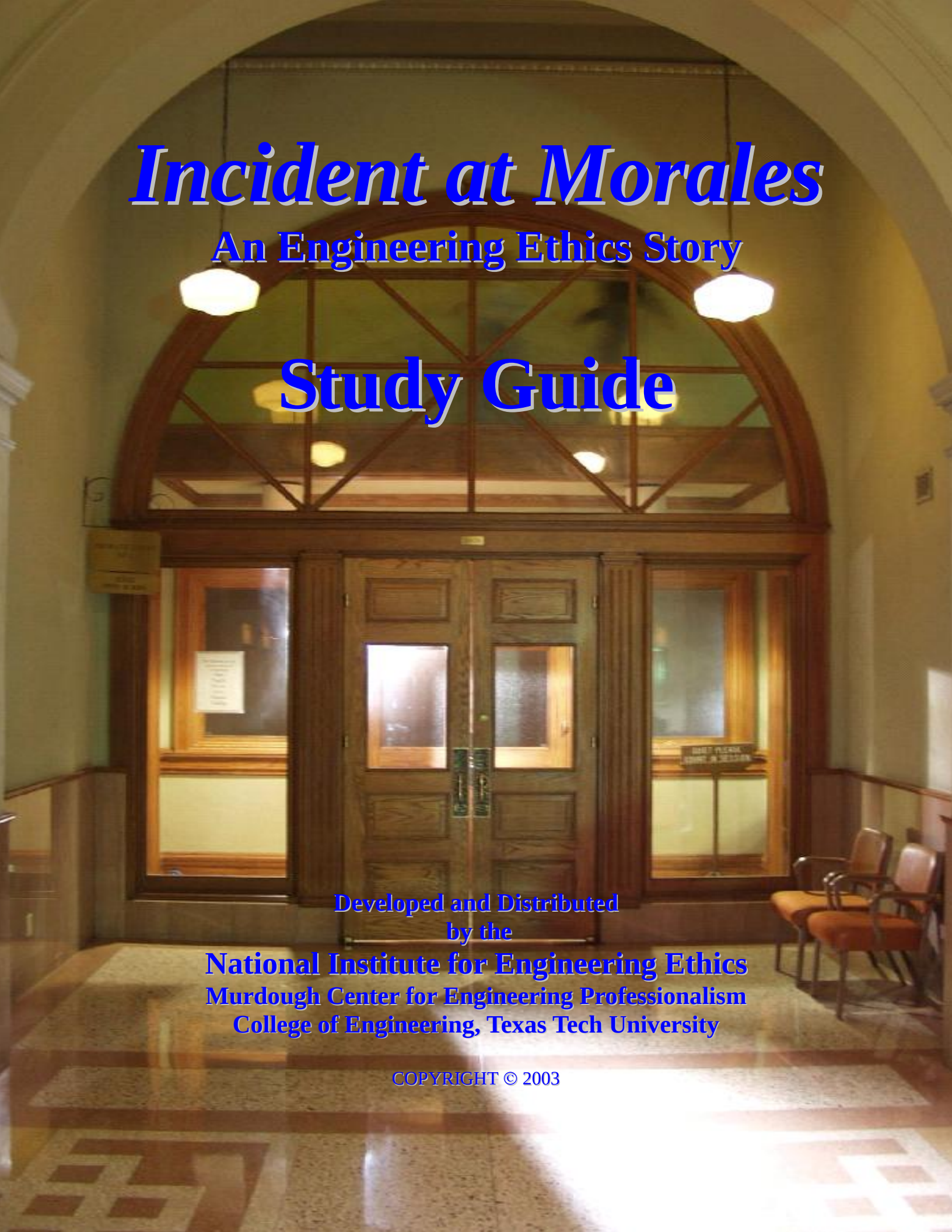


# *Incident at Morales*

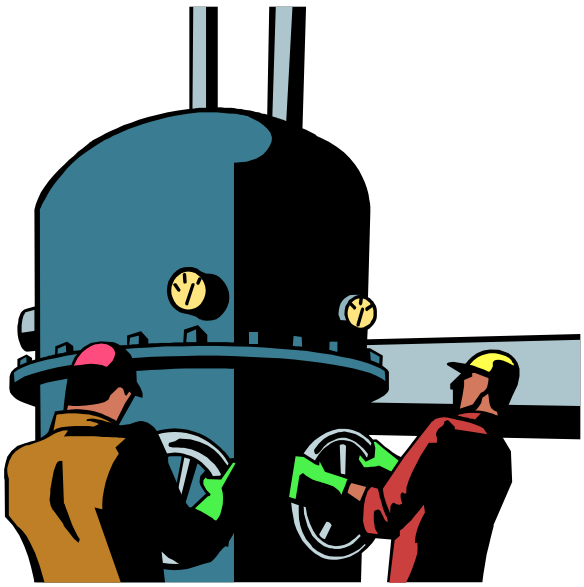
## An Engineering Ethics Story

# Study Guide

**Developed and Distributed**
**by the**
**National Institute for Engineering Ethics**
**Murdough Center for Engineering Professionalism**
**College of Engineering, Texas Tech University**

# CONTENTS





# Part A: Development of *Incident at Morales*

*Incident at Morales* was developed by the National Institute for Engineering Ethics (NIEE), Murdough Center for Engineering Professionalism, Texas Tech University, with a grant from the National Science Foundation (Grant # SES-0138309) supplemented by significant donations from individuals, engineering societies, companies, and universities. Great Projects Film Company of New York City is the producer of the video. This study guide, the script and other information about the video may be obtained from the NIEE Internet site: www.niee.org.

*Incident at Morales* is a product of the combined efforts of a team with representation from several universities and individuals with experience in various engineering disciplines and philosophy:


## *Acknowledgments*

In addition to funding for the video provided by Grant SES-0138309 from the National Science Foundation, major donations came from:

**Harry E. Bovay, Jr., P.E.**
Past President, NSPE; President, Mid-South Telecommunications

**Victor O. Schinnerer and Company, Inc.**

**National Society of Professional Engineers**

**American Society of Mechanical Engineers**

**William J. Lhota, P.E.**
Retired President, American Electric Power Energy Delivery

**Steven P. Nichols, P.E.**
Director, Clint W. Murchison Chair of Free Enterprise, University of Texas at Austin

**Robert L. Nichols, P.E.**
Past President, NSPE and NIEE

**Donald L. Hiatte, P.E.**
President, NCEES; Past President, NSPE

**Jimmy H. Smith, P.E.**
Past President, NIEE

**Leader of Private Fund Raising**

**E.D. "Dave" Dorchester, P.E.**
Immediate Past President, NIEE

**Script Consultants/Advisors**
**Jose Guerra, P.E.; Jose Novoa, P.E.; Christopher Smith**

## *Executive Producers*

*(NIEE Video Team)*

**Jimmy H. Smith, Ph.D., P.E.**
Project Director
Professor of Civil Engineering and Director,
National Institute for Engineering Ethics
Texas Tech University

**Steven P. Nichols, Ph.D. J.D., P.E.**
Associate Vice President for Research
University of Texas at Austin

**Michael C. Loui, Ph.D.**
Professor of Electrical & Computer Engineering
University of Illinois at Urbana-Champaign

**Vivian Weil, Ph.D.**
Professor of Philosophy
Director, Center for the Study of Ethics in the Professions
Illinois Institute of Technology

**Philip E. Ulmer, P.E.**
Past President, NIEE
Consulting Safety Engineer
Eagle River, Alaska

**Carl M. Skooglund**
Retired Vice President and
Ethics Director
Texas Instruments, Dallas

**Frederick Suppe, Ph.D.**
Professor of Philosophy
Texas Tech University

**E. Walter LeFevre, Jr., Ph.D., P.E.**
**Past President, NSPE**
Professor of Civil Engineering
University of Arkansas

**Patricia Harper**
Program Coordinator and
Video Production Assistant
National Institute for Engineering Ethics -
Texas Tech University

## *Producer*

**Kenneth Mandel**
**Great Projects Film Company**
594 Ninth Avenue
New York, NY 10036

(212) 581 1700

## *Writer-Director*

**Paul Martin**
**Great Projects Film Company**

# Part B: Suggestions for Use of the Video

*Incident at Morales* is not intended as a "quick fix" but as one tool that should be utilized to augment programs in engineering ethics. Typical programs in engineering ethics have several goals:

- ***Sensitivity***: to raise awareness of ethical aspects of professional work
- ***Knowledge***: to learn about professional standards
- ***Judgment***: to develop skills in moral reasoning
- ***Commitment***: to strengthen personal dedication to exemplary conduct

## *Suggestions on How to Use the Video*

The video is designed for interactive use with a discussion facilitator. The total running time of the video is thirty-six minutes; there are opportunities to pause for discussions after approximately twelve and twenty-four minutes.

At each break, the facilitator may engage viewers in a discussion of the ethical issues raised in the previous segment. At a university, the video may be used in three consecutive fifty-minute class sessions: the professor or facilitator might use one segment in each class session.

In a professional development workshop or seminar, two hours would be sufficient time for viewing and discussion.

The facilitator should view the video in advance and plan the discussion periods. The facilitator may decide to break a large audience into smaller groups - each consisting of three to six participants - for a more effective discussion period.

The facilitator should assign specific tasks to the participants. For instance, participants may be asked to generate questions for further discussion; suggestions for discussion questions appear later in this guide. Specific questions might require participants to:

- Identify ethical, technical, and economic issues and problems
- Identify affected parties (stakeholders) and their rights and responsibilities
- Identify social and political constraints on possible solutions
- Determine whether additional information is needed to make a good decision
- Suggest alternative courses of action for the principal characters
- Imagine possible consequences of those alternative actions
- Evaluate those alternatives according to basic ethical values

Actions can be evaluated by whether they honor basic ethical values such as:

- ***Honesty***
- ***Fairness***
- ***Civility***
- ***Respect***
- ***Kindness*.**

Actions can also be evaluated by the following tests (cf. Davis, 1997):

- ***Harm test**:* Do the benefits outweigh the harms, short term and long term?
- ***Reversibility test**:* Would I think this choice was good if I traded places?
- ***Colleague test**:* What would professional colleagues say?
- ***Legality test**:* Would this choice violate a law or a policy of my employer?
- ***Publicity test*:** How would this choice look on the front page of a newspaper?
- ***Common practice test**:* What if everyone behaved in this way?
- ***Wise relative test**:* What would my wise old aunt or uncle do?

In a classroom with engineering students, the professor might assign a short in-class writing exercise or a longer reflective paper.

In these assignments, students should articulate what they learned from the video and the discussion.

For additional recommendations of teaching strategies, see:

- **Davis, Michael** (1997), "Developing and Using Cases to Teach Practical Ethics," ***Teaching Philosophy***, vol. 20, no. 4, pp. 353–385.

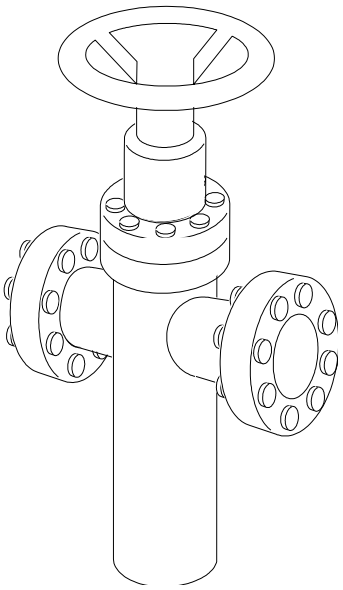
Additional Resources:

- **C. E. Harris, M. S. Pritchard, and M. J. Rabins,** *Engineering Ethics: Concepts and Cases,* 2nd ed., Wadsworth/Thompson Learning, 2000.
- **D. G. Johnson,** *Ethical Issues in Engineering,* Prentice-Hall, 1991.
- **M. W. Martin and R. Schinzinger,** *Ethics in Engineering,* 3rd ed., McGraw-Hill, 1996.
- Online Ethics Center for Engineering and Science: **http://onlineethics.org.**
- National Institute for Engineering Ethics: **http://www.niee.org.**

# Part C: Story, Cast of Characters, & Synopsis

## *Story:*

*Incident at Morales* involves a variety of ethical issues faced by a company that wants to quickly build a plant in order to develop a new chemical product to gain a competitive edge over the competition.



Potential technical and ethical issues arise from choices of designs, including valves, piping, chemicals, etc. The process to develop the product is designed to be automated and controlled by computer software. The process also involves high temperatures and pressures and requires the use of chemicals that need special handling.

Because of environmental considerations related to the chemicals used in the process, the company decides to construct their plant in Mexico. Technical, environmental, financial, and safety problems arise that involve ethical issues.

## *Cast of Characters*

**Fred**: .....Chemical Engineer hired by *Phaust* to design a new plant to manufacture a new paint remover

**Wally**: .....Fred's supervisor at *Phaust*

**Chuck**: .....Vice President of Engineering at *Phaust*

**Dominique**: ...Corporate liaison from *Chemistré* (parent company in France) to *Phaust*

**Maria**: .....Fred's wife, a compliance litigator for U.S. Environmental Protection Agency

**Hal**: .....Market Analyst at *Phaust*

**Jen**: .....Research Chemist at *Phaust*

**Peter**: .....Project Manager of the construction firm that builds the new plant in Morales

**Jake**: .....Plant Manager for the *SuisseChem* plant in Big Spring, Texas

**Manuel**: .....Plant manager for the new *Phaust* plant in Morales, Nuevo Leon, Mexico

# *Synopsis:*

*Phaust Chemical* manufactures "Old Stripper," a paint remover that dominates the market.

On learning that *Phaust's* competitor, *Chemitoil*, plans to introduce a new paint remover that may capture the market, executives at *Phaust* decide to develop a competing product.

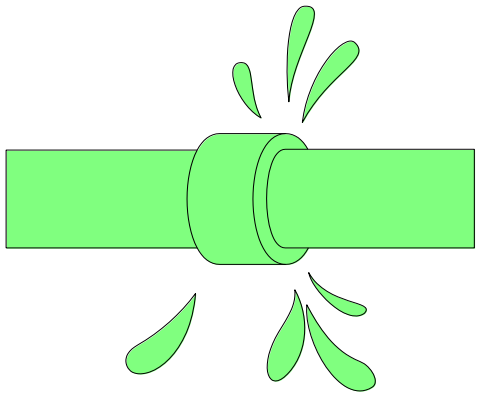
To save money in manufacturing the product, *Phaust* decides to construct a new chemical plant in Mexico and hires chemical engineer Fred Martinez, a former design engineer for the consulting company *Chemitoil*, to design the plant.

Problems arise when *Chemistré*, *Phaust*'s parent company in France, slashes budgets 20% across the board.

In response, Chuck, the vice president of engineering at *Phaust*, strongly encourages Fred to reduce construction costs.

Fred confronts several engineering decisions in which ethical considerations play a major role:

- Whether to use expensive controls manufactured by Lutz and Lutz, which has an inside connection at Phaust
- Whether to line the evaporation ponds to prevent the seepage of hazardous substances in the effluents into the groundwater, although local regulations may not require this level of environmental protection
- Whether to purchase pipes and connectors made with stainless steel or a high pressure alloy



When samples of *Chemitoil's* new paint remover, "EasyStrip," become available, it is clear that to be competitive with "EasyStrip," *Phaust* must change the formulation of its new paint remover, which requires higher temperatures and pressures than originally anticipated.

Some unexpected problems arise:

- Leakage occurs in one of the connections
- The automatic control system fails so the plant manager offers to control the process manually

After the plant goes into full operation, an accident occurs, and the plant manager is killed while manually controlling the manufacturing process.

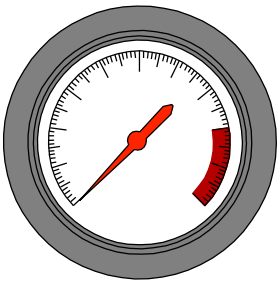
# Part D: Ethical Issues and Purpose of the Video

## *Ethical Issues:*

A wide variety of ethical issues surface in *Incident at Morales*, including:

- Ethical responsibilities and obligations don't stop at the U.S. border
- Ethics is an integral (and explicit) component of ordinary technical and business decision-making in engineering practice. Engineers impact people and should be more concerned about people than objects
- Technically competent, ethically sensitive, reasonable people may have different perspectives and can disagree when faced with complex ethical issues
- Negotiations resolve some of the conflicts in the video, but some ethical conflicts remain unresolved. Ethical problems are sometimes resolved by rational methods and compromise
- Market stresses arise from competition with other companies and from pressures to advance a design and construction schedule
- It is sometimes necessary to make decisions under pressure with incomplete data, insufficient time, and insufficient information
- Guidance to help resolve ethical problems is available in the form of codes of ethics and actual case studies from professional and technical engineering societies and engineering licensing boards.

Consideration of consequences of technical, financial, and ethical decisions is an important element of the video



## *Purpose:*

The video is designed to help viewers become more aware that:

- ❖ Ethical considerations are an integral part of making engineering decisions
- ❖ A code of ethics will provide guidance in the decision-making process
- ❖ The obligations of a code of ethics do not stop at the United States border
- ❖ The obligations of engineers go beyond fulfilling a contract with a client or customer

**"No man can always be right.**
**So the struggle is to do one's best**
**to keep the brain and conscience clear;**
**never to be swayed by unworthy motives**
**or inconsequential reasons,**
**but to strive to unearth the basic factors involved**
**…and then do one's duty."**

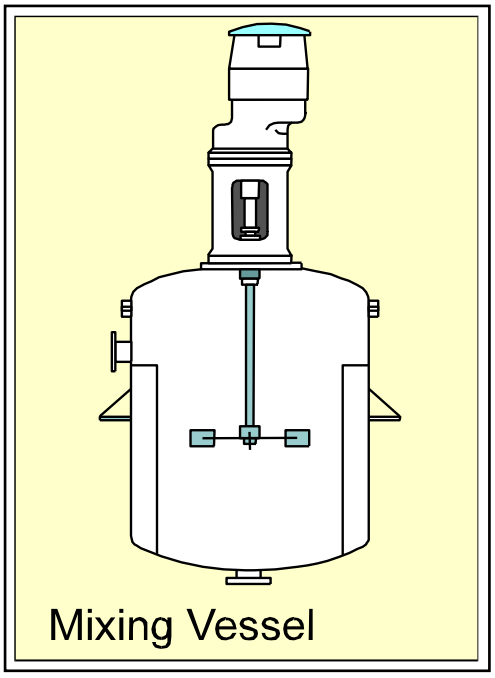
*Dwight D. Eisenhower*

# Part E: Questions *Incident at Morales* Raises

**(Abbreviated and Expanded Lists)**

## *I. Abbreviated List of Questions for Use after Each Segment*

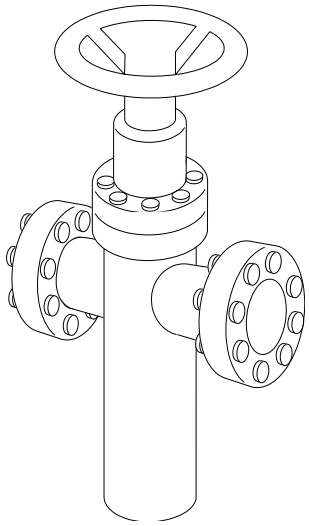
### *First Segment*




1. What is Chuck's primary motivation for hiring a licensed Professional Engineer (P.E.)?
2. Dominique asks whether it is ethical to hire an engineer who has recently worked for a competitor, and Chuck replies that while employed as a contractor at *Chemitoil*, Fred was not required to sign a non-disclosure agreement.
   a) What issues are involved in hiring an engineer from a competitor?
   b) Does Fred have any obligations of confidentiality to *Chemitoil* even if he has not signed a non-disclosure agreement?
3. On Fred's first day, Wally says "We're fast at *Phaust*." How might engineering decisions be affected by a corporate culture that emphasizes speed?
4. Wally tells Fred he has one rule: whether news is good bad, Fred must always tell Wally first.
   a) What is the potential impact of Wally's "One Rule"?
   b) How should Fred respond?
5. If the legal department at *Phaust* had approved it, why would "Strip-Teasy" be an inappropriate name for the new paint stripper?
6. The team meeting is marked by tension.
   a) Do ethical obligations suffer when the team is dysfunctional?
   b) Is some degree of disagreement appropriate?
   c) When does conflict become counterproductive?
7. Chuck alludes to inflating the budget as a hedge against potential budget cuts:
   a) What is the difference between inflating a budget and providing contingency funds as a line item?
   b) What happens to a project when engineers are faced with budget cuts across the board?

## *Second Segment*

1. Chuck's brother-in-law is the U.S. representative for Lutz and Lutz. What ethical questions does the procurement process raise when the in-law of a corporate officer works for the supplier? How does this situation look from the viewpoint of other potential suppliers?
2. While touring the *SuisseChem* plant, should Jake, Fred, and Peter wear additional protective gear?
3. Jake tells Fred "You gotta' do what you gotta' do." Should this advice instead be "You gotta' do what you oughta' do"?
4. At *SuisseChem*, personnel in operations work with engineering personnel in designing chemical plants, but at *Phaust*, operations and engineering are clearly separate. What are the implications of separating engineering from operations?
5. Is it proper for Fred to share his concerns with his wife, Maria, especially since her employer is an environmental regulatory agency (EPA)?
6. Fred says that the new plant is outside Maria's jurisdiction because it will be in Mexico. Do our professional responsibilities for the environment and for safety change when we cross national borders?



## *Third Segment*

1. Was Wally justified in confronting Fred about the environmental meeting? What were his motives?
2. When Wally confronted Fred, Fred said that he was looking through some ethics manuals where he would have found a corporate or professional code of ethics. What would these codes say about his situation?
3. Did Fred act responsibly in both (a) lining the evaporation ponds and (b) specifying cheaper controls?
4. While talking with Peter, Fred is inspired to make the couplings a maintenance issue, specifying that the couplings should be replaced regularly. Is it appropriate to convert design decisions into maintenance procedures without including operations people in the decision process?
5. Although the chemical process was supposed to be automated, Fred allowed Manuel to volunteer to control the process manually. Is this reasonable?
6. How should a company, such as *Phaust*, encourage honorable behavior and minimize ethical problems in the future?

# II. Expanded List of Questions After Viewing Entire Video

**Topics Considered**



## Initial Ethical/Legal Issues

1. How does a corporate culture affect how we practice engineering, and, in particular, how does it affect our dealings with ethical issues?

2. Was it ethical for *Phaust* to hire Fred, who recently did similar work for a competitor, *Chemitoil*?

3. What is Chuck's primary motivation for hiring a licensed Professional Engineer (P.E.)?

4. What issues are involved in hiring an engineer from a competitor?

5. How can Fred maintain a reputation for trustworthiness - being able to have insider information - while serving his new employer properly?

6. Although the lawyers note that Fred has no legal obligations to *Chemitoil* because he did not sign a non-disclosure agreement, does Fred have a moral obligation to ensure the confidentiality of the information he may have learned at *Chemitoil*?

7. Does *Chemitoil* have an obligation to make sure that Fred is comfortable with what he should or should not disclose regarding his employment with their company?

## More About Fred

8. Did Fred seem too young for the major responsibility of designing a new plant?

9. Is there anything that Fred should have asked about *Phaust* before accepting the job offer?

10. Should Fred have expressed his concerns more forcefully? If so, how?

11. Were all professional levels accountable for the oversights of engineering decisions?

12. How might professional or technical engineering societies be involved in this case?

## *Wally's "One Rule"*

13. What is the impact of Wally's "One Rule" on Fred's ability to do his job? More importantly, does this interfere with Fred's ability to meet his professional ethical obligations in the course of conducting his job?

    a) How should Fred respond to Wally's "One Rule"?

    b) Is it possible for Fred to keep Wally, his supervisor, informed while fulfilling his obligations as an engineer to voice his concerns to the appropriate people at the appropriate time?

14. We recall Chuck saying "Fred you don't have to deal with these issues alone." Who should Fred be able to rely on to help him deal with "these issues"?

15. When Wally learned about the meeting with the environmental experts, was his reaction to Fred justified?

16. What was Wally's true reason in being so upset with Fred? He mentioned a very important element - employee bonuses. Was Wally referring to employee bonuses, or was he showing concern for his own bonus?

17. What do people really think they're being paid for? The employee's perception of what he/she is being paid for can influence his/her decisions and judgments with relationship to his/her position. Is Wally's perception of his position what influenced his reaction to Fred when he violated the "One Rule"?

    a) Is this part of normal or usual corporate culture?

b) Should it be?

18. Should corporate leaders influence their employees' perceptions of their corporations with regard to its monetary compensation (i.e., salary, bonuses, benefits, etc.)?

## *Company Slogan*

19. Corporate tagline: "*Phaust* is fast." Can "fast" mean both efficient and productive, or does expediency necessarily allude to irresponsibility?

20. Does "fast" mean "cheap"?

21. If you're going put a project on a fast-track, how can you make sure you provide the resources to enable it to be done properly?

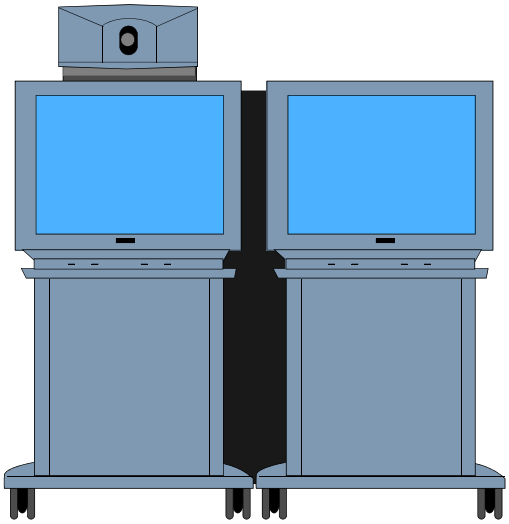
## *Effective Communications*

22. The team meeting is marked by tension. Do ethical obligations suffer when the team is dysfunctional? Is some degree of disagreement appropriate? When does conflict become counterproductive?

23. Notwithstanding Wally's rule, if we are to develop a corporate culture, how do we encourage the kind of discussions that facilitate comfort in speaking freely of ethical, safety, and legal issues, as well as facilitate an *obligation* to speak freely about safety, ethical and legal issues?

24. What are some standards the leadership of an organization has to consider when creating an environment that creates this kind of a situation? Some questions we might ask ourselves:
    a) How do we set the appropriate standards?
    b) How do we make sure that we have communicated those standards effectively so that people not only understand them but also believe we're serious about them?

## *Regarding the L&L Controls*



25. The sales representative for Lutz & Lutz Controls is Chuck's brother-in-law. Does this kind of a personal relationship tend to compromise not only the integrity but the effectiveness of the procurement process?

26. How does the relationship with L&L look from the perspective of other suppliers?

27. Should Fred take into account the possibility that there's actually a positive aspect in the long-term relationship between *Phaust* and L&L Controls?

28. How can a process be arranged so that we can assure that it is effective and that we are purchasing from the supplier that's going to provide the best service and price for the organization?

29. Should we view that process from the perspective of other manufacturers of industrial controls?

30. What should Fred's role be in the procurement decision-making process?

31. What should be the role of others to make sure that the process is running effectively?

32. From whose perspectives should these decisions be made?

## *Marketing Decisions*

33. Someone at *Phaust* suggested the name "Strip-Teasy" for the new paint-stripping product. Was this suggestion appropriate from an ethical viewpoint?
34. Should engineers have some input with regard to how the product is to be marketed?
35. Do marketing methods ever have engineering consequences?
36. Regarding Hal, from product development and market research, Wally whispered to Fred: "He's not one of us." What feeling does this statement convey? Is this likely to promote tension and/or dissention?
37. Should corporations have an obligation to have sensitivity training for their managers and their engineers?
    a) What has society taught people in this matter?
    b) How is that brought into the corporate boardroom?
    c) How is that transcended into the corporate culture?
38. What do you think you would do to promote trust and respect among your colleagues and other professionals in other departments?

## *Budget Issues*

39. The French corporate headquarters mandated a 20% cut across the board. Is there a difference between cutting budgets across the board rather than giving a bottom line and allowing management to differentially cut in ways that impact less severely on the viability of the project?
40. Regarding the sudden cut in budget, Chuck says, "Sometimes you inflate budgets, and sometimes you build schedules with slack. That way, if something unexpected occurs, you're covered." Is this the same as covering for contingencies?
41. Did this attitude toward the budget promote "trust" in the company?

## *Interaction Between Plant Designers and Plant Operators*

42. Should the engineers designing the project be in contact with people who have to maintain or operate it? Is this a serious consideration? How important is this relationship?
43. Is divorcing maintenance and operations from design a serious thing?
44. Is the separation of operations and design an ethical issue, or is it just a business issue?
45. When it becomes clear that the engineers are passing potential problems with valves and switches on to the future productivity of operations, does it seem that this is simply a way of sloughing off responsibility?
46. Is this action representative of the corporate culture of *Chemitoil*?
47. Does this attitude promote trust between designers and operations/maintenance personnel?

## *Safety Issues*

48. Were there any scenes that revealed a lack of proper protective equipment being worn?

49. Does wearing proper protective equipment in a plant become a leading indicator of other corporate culture problems?

50. What about engineering college laboratories? Do faculty and students always wear appropriate safety gear?

51. Is this an ethical issue?

52. Do accidents just "happen," or are they "caused"?

53. When we think about engineers working with operations people, should there be a mutual respect for entering - what we might call - their "territory of responsible care"?

54. Whose responsibility is it to make sure that reasonable care and attention is given to safety?

    a) The plant operator?
    b) The manager of the lab?
    c) Anyone who observes the problem?

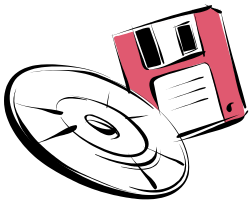
55. If we were to analyze the culture of *Phaust*, would the safety issues provide some good indicators about the entire culture of the company?

## *Regarding the Software of the Cheaper Controls*

56. Fred decides to investigate the possibility of using the less expensive controls which, according to Peter, the project manager in Big Spring, has software that's "as buggy as a New York City basement." Why is it that software is so hard to get correct?

57. What is the responsibility of software engineers to take safety into consideration when they develop new software?

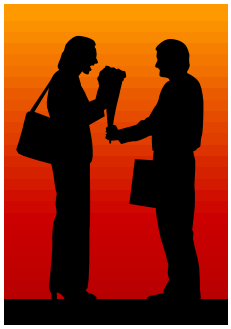
58. What responsibility do software engineers have for the quality of their products when the software will control a safety related process?



59. Do the ethical obligations of software engineers differ from those of other kinds of engineers (civil engineers, mechanical engineers, materials engineers)?

60. What are the differences between office software and process control software?

## *Personal Relationships*



61. Is it appropriate for an engineer to discuss company matters with family members when he feels ethically bound to keep this information confidential?

62. How do employees and engineers decide whether to share some of their information from work when they go home?

63. Should anything be said at all?

64. The story shows a husband and wife (Fred and Maria) at home. Does this personal interaction have any effect on the story?

65. As an attorney for EPA, did Maria's interest in how Fred was going to manage certain types of environmental issues that she had some specialized expertise in exemplify poor ethical standards?

66. Was it fair for Maria to use seductive techniques to win her way?

67. Is Maria's code of ethics an issue?

68. Was she flirting with some ethical issues that were outside the engineering area?

69. If Maria had been a schoolteacher or a nurse instead of an EPA compliance officer, would you have viewed this differently?

## *Regarding International Cultural Issues*

70. What different challenges do international engineering practices offer?

71. What different opportunities do international engineering practices offer?

72. Do legal obligations change when we cross a state or national border?

73. Do our professional technical responsibilities and our ethical obligations change?

74. Do our obligations for the safety of our employees, the public, and environmental responsibilities change as we cross national borders?

75. Should we take the local culture into account? If so, how?

76. Do we have different ways of meeting our obligations?

77. Does it matter that *Phaust* is owned by a foreign firm who may not have the same cultural ideals as its North American management?

78. Should engineers act or react differently if they're owned by a foreign corporation?

## *Making Decisions*

79. When Wally confronted Fred, Fred said that he was looking through some ethics manuals where he would have found a corporate or professional code of ethics. What would these codes say about his situation?

80. When making final decisions, was Fred trying to meet his ethical obligations within the constraints that he had?

81. We know that Fred decides to make a trade off in costs. Should Fred have decided to line the ponds rather than use higher quality controls?

82. Because lining the ponds was going to be more expensive, was Fred's decision to use cheaper controls and couplings a responsible one?

83. Are Fred's decisions the most effective ways to meet his obligations of ensuring the safety, health, and welfare of the operators and the public, as well as being a good employee and not exceeding his budget?

84. Is it ethically permissible to use a control system with sensors at the end of their normal operating range?

85. Should Fred have thought about future problems when specifying the cheaper controls and couplings?

86. Fred was thinking ahead; however, he was unable to anticipate every deviation. Should he have been more prudent and tried to anticipate more of those deviations?

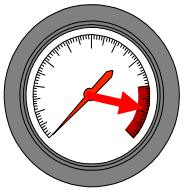
87. What options did Fred have?

88. At what point, if any, should the project have been stopped?

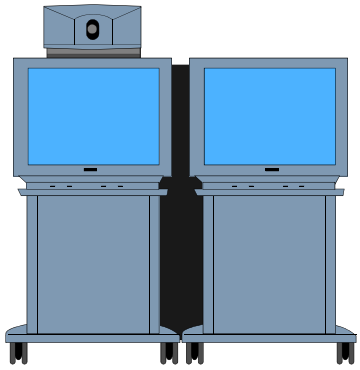
89. What would you have done?

90. Do you think that you would receive the same degree of criticism from your company if you violated an ethical standard compared to violating or missing a deadline or an objective?

91. Do you put ethical issues on the same level of importance as business objectives?



## *What if Automatic Controls Don't Work*



Fred believed that the cheaper design was satisfactory until he learned that in order to produce a more competitive product, the pressure and temperature of the process had to be increased significantly. This exceeded the limits of the cheaper automatic controls.

The plant manager volunteers to control the process manually. Fred allows the plant manager to control the process.

92. Is it ethical to design an automated system, and then let your backup be a person?
93. Should there be an automated system where an individual supplements, rather than replaces, it?

## *Margin of Error and Reasonable Care*

94. Did the design involve a margin of error?
95. What would you have done if you had been Fred?
96. Is it possible (or likely) that under pressure, we'll let liability insurance be our safety factor?
97. Do you feel that some companies may be willing to accept catastrophic failure as long as they are insured enough to cover the damages and liability?
98. Since nothing can be both totally safe and affordable, what is a reasonable amount of protection from failure?

## *Trust and Candor*

99. What is the most critical element in effective relationships? Loyalty? Obedience? Money? Trust? Openness? Candor?
100. What roles should trust play in our professional and personal interactions?
101. What role should candor play in a professional or personal relationship?
102. Would candor imply effective communications?
103. Could you envision one definition of ethics as being "those activities and practices that tend to enhance trust"?
104. Although there are a lot of things that one will gain during the course of a professional career, there may be some things that can be taken away from you. Your job could be taken away (we see that happening all too often with downturns in the economy).
    a) Can you think of something that can never be taken away - unless you allow it to be?
    b) What about your "reputation for integrity"?
105. If someone says "I trust you," how does this make you feel about the relationship?

## *If You Were in Charge*

When we are involved in our day-to-day work, we tend to look up to our leaders, supervisors, and/or bosses for guidance and inspiration in terms of how we conduct ourselves. It is important for us to put on another hat. Let's say to ourselves "Okay, we're in charge. We're the boss, we own the company, we have all the money we need to decide what we want to produce, where we're going to produce it, how we're going to produce it, and how we're going to set up the whole organization." We need to ask ourselves some questions,:

106. What are the specific actions that we take as leaders, as the boss, as the owner, to make sure that everyone in our organization feels that they should conduct themselves to the highest standards of professional conduct and professional ethics?

107. What are the specific attributes that you would have in place in your company to make sure that happens?

108. What would you do if you were the leader and had all the controls at your command to set up your organization any way you wanted to, in order to make sure that everyone in that organization would conduct themselves to the highest professional and ethical standards? Would some of the following actions come to mind?

    a) Clearly define your expectations of professional/ethical actions

    b) Communicate those expectations effectively and continuously

    c) Live the standards personally. What people see in actions is what they're going to believe

    d) Create candor and open communication in the environment so that anyone within the organization feels free to bring up and discuss their thoughts, opinions, and ideas, but most of all, they feel free to bring up their concerns, problems, and news, be it good or bad, without fear of suffering some sort of retribution or reprisal

**"Values are like fingerprints.**
**Nobody's are the same,**
**but you leave 'em all over everything you do."**

*Elvis Presley*

# *Suggested Assignment*
# *for*
# *Incident at Morales*

It is suggested that this page and the following page (which repeats the synopsis and cast of characters) be copied and distributed before viewing *Incident at Morales*. After viewing the video, ask viewers to prepare a written assignment in response to the instructions below. (Suggested length: 2 to 3 pages; 1.5 space; 12 point type; 1 inch margins)

1. List the ethical issues you observed in *Incident at Morales*.

2. From your personal perspective, prioritize these ethical issues from most critical to least critical

3. Discuss the video from three additional perspectives:

   a) **Fred's Perspective**: Assume you are Fred:

      i) What specific ethical issues do you (Fred) face?

      ii) What are some things that you should consider?

      iii) From whom or where would you seek guidance?

   b) **Wally's Perspective**: Assume you are Wally:

      i) What specific ethical issues does Wally face?

      ii) What do you think Wally's motivation was for having "One Rule"?

      iii) What do you think about Wally's "One Rule"?

      iv) What decisions would you change if you were Wally?

   c) **Responsibility Perspective**: If you were in charge and had the authority and the funding to make any changes you wanted to make in company policies:

      i) What specific steps would you take to improve the company culture?

      ii) Who would you involve in this process?

      iii) How and when would you communicate the company policies to:

         (a) Your employees?

         (b) Your clients?

         (c) The public?

# *To Assist in Responding to the Suggested Assignment, the Synopsis and Cast of Characters are Repeated Here*

## *Synopsis:*

*Phaust Chemical* manufactures "Old Stripper," a paint remover that dominates the market. On learning that *Phaust's* competitor, *Chemitoil*, plans to introduce a new paint remover that may capture the market, executives at *Phaust* decide to develop a competing product.

To save money in manufacturing the product, *Phaust* decides to construct a new chemical plant in Mexico and hires chemical engineer Fred Martinez, a former design engineer for the consulting company *Chemitoil*, to design the plant.

Problems arise when *Chemistré*, *Phaust*'s parent company in France, slashes budgets 20% across the board. In response, Chuck, the vice president of engineering at *Phaust*, strongly encourages Fred to reduce construction costs.

Fred confronts several engineering decisions in which ethical considerations play a major role: a) whether to use expensive controls manufactured by Lutz and Lutz, which has an inside connection at Phaust, b)whether to line the evaporation ponds in order to prevent the seepage of hazardous substances in the effluents into the groundwater, and c) whether to purchase pipes and connectors made with stainless steel or high pressure alloy.

When samples of *Chemitoil's* new paint remover, "EasyStrip," become available, it is clear that to be competitive with "EasyStrip," *Phaust* must change the formulation of its new paint remover, which requires higher temperatures and pressures than originally anticipated. Some unexpected problems arise: a) leakage occurs in one of the connections, and b) the automatic control system fails ; therefore, the plant manager offers to control the process manually. After the plant goes into full operation, an accident occurs, and the plant manager is killed while manually controlling the manufacturing process.

## *Cast of Characters*

**Fred**: .....Chemical Engineer hired by *Phaust*

**Wally**: ...Fred's supervisor at *Phaust*

**Chuck**: ..Vice President of Engineering at *Phaust*

**Dominique**: Corporate liaison to *Phaust* from parent company *Chemistré*

**Maria**: ...Fred's wife, a compliance litigator for the U.S. EPA

**Hal**: .....Market Analyst at *Phaust*

**Jen**: .....Research Chemist at *Phaust*

**Peter**: ....Project Manager of construction of the new plant in Morales

**Jake**: .....Plant Manager for the *SuisseChem* plant in Big Spring, Texas

**Manuel**: Plant Manager for the new *Phaust* plant in Morales

# *Incident at Morales*

## An Engineering Ethics Story

Copies of the Video in VHS or DVD Format May Be Purchased By Contacting the

**National Institute for Engineering Ethics**
Box 41023, Lubbock, Texas 79409-1023
Phone: 806-742-6433 (NIEE) or 806-742-3525; Fax: 806-742-0444
Email: Ethics@coe.ttu.edu

*Murdough Center For Engineering Professionalism*
*Texas Tech University, College of Engineering*

This Study Guide, Power Point Presentation and additional information about *Incident at Morales* may be viewed and downloaded free of charge from our web site:

**www.niee.org**

Second Edition of the Study Guide Printed September 2003