

Engineering Ethics: Public Health, Safety, and Welfare

The Live Webinar will begin shortly.....

Upcoming PE Institute Live Webinars

Wednesday, March 29 at 2pm

[Critically Thinking for Engineers](#)

Wednesday, April 19 at 2pm

[Engineering Ethics: Objectivity and Truthfulness](#)



NATIONAL SOCIETY OF
PROFESSIONAL ENGINEERS

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Key Concepts in Engineering Ethics: Public Health and Safety, Professional Selection, Advertising, and Expert Witness Testimony

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Engineering Ethics

- *“Among the universal ethical values are honesty, integrity, promise-keeping, fidelity, fairness, respect for others, responsible citizenship, pursuit of excellence and accountability.”*
 - Michael Josephson

Engineering Ethics

- **Black and White Areas – Easy**
 - Right vs. Wrong
- **Gray Areas – Tougher**
 - Right vs. Right
 - Lesser of the Evils/Dilemma
- **Other Factors**
 - Time/Money
 - Family
 - Career
 - Reputation

Engineering Ethics



- **Why Study Engineering Ethics?**

- To Understand the Standards Governing What is Acceptable Behavior in the Practice of Engineering

- **Why Practice Engineering Ethically?**

- Personal Injury/Property Damage
- Disciplinary Action
- Impact on Reputation, Employer, Clients, Profession
- Possible Loss of Job, Business, etc.

Engineering Ethics

- *“All products of technology present some potential dangers, and thus engineering is an inherently risky activity... Engineering should be viewed as an experimental process. It is not, of course, an experiment conducted solely in a laboratory under controlled conditions. Rather, it is an experiment on a social scale involving human subjects”*
 - Martin and Schinziger, Ethics in Engineering

Engineering Ethics

- **Professional Codes of Ethics**

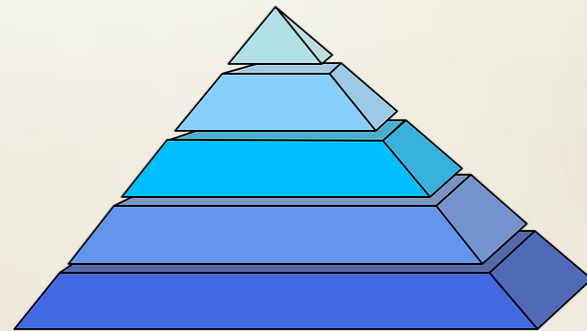
- A code of professional ethics results when a field organizes itself into a profession. The resulting code is central to advising those professionals how to conduct themselves, to judge their conduct and to understand the profession.



Engineering Ethics

Hierarchy of Ethical Obligations

- **Primary:** Ethical Obligations to the Public
- **Secondary:** Ethical Obligations to Employer or Client
- **Tertiary:** Ethical Obligations to Other Professionals and Other Parties



Engineering Ethics

Three Basic Ethical Obligations – (1) Public, (2) Employer/Client and (3) Other Professionals...

- Never Mutually Exclusive - Reciprocal
- Not A “Zero Sum Game”
- All Need To Be Considered At All Times
- Should Be Complementary to Integrated With One Another to the Fullest Extent Possible
- Ethical Integration = Professional Integrity



Engineering Ethics

Seven Principles Impacting Each Obligation

1. *Protecting The Public Health, Safety and Welfare*
2. *Demonstrating Professional Competence*
3. *Maintaining Objectivity/Truthfulness*
4. Addressing Conflict of Interest
5. Preserving Confidentiality
6. Receiving and Providing Valuable Consideration
7. Emerging Areas/Emerging Challenges



Engineering Ethics

This session will focus on public health and safety relating to water testing equipment, professional selection and the receipt of a submission beyond the published date, advertising while omitting a geographic address and expert witness testimony in which there is a discovery of new data following the submission of a report.

Engineering Ethics

Public Health, Safety and Welfare—Water Testing Equipment”

Case No. 16-1



Engineering Ethics



Facts:

- Engineer A, a professional engineer, is employed by H2O Corp, a mid-sized industrial company involved in the design and manufacturing of equipment used in water quality testing. Six months earlier, Engineer A observed that certain new water quality testing equipment that was being designed and manufactured by the company met water quality testing equipment standards based on in-house testing but failed outside testing performed by an independent laboratory. Engineer A raised his professional and technical concerns about the equipment with his non-engineer supervisor Smith.

Engineering Ethics

Smith replied that he would look into the matter, but after several months, the equipment continued to fail to meet state water quality testing equipment standards based on outside testing performed by the independent laboratory.

- Recently Smith asks that Engineer A accompany Smith to a meeting with a government regulator involved in the approval process for water quality testing equipment providers on public water projects. Prior to the meeting, Smith requests that Engineer A report to the regulators to report that H2O Corp's new testing equipment was currently on track to meet the water testing equipment standards.



Engineering Ethics

Question:

- What are Engineer A's ethical obligations under the circumstances?



Engineering Ethics

Section I.1. - Code of Ethics:

Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health, and welfare of the public.



Engineering Ethics

Section I.3. - Code of Ethics:

Engineers, in the fulfillment of their professional duties, shall issue public statements only in an objective and truthful manner.



Engineering Ethics

Section I.4. - Code of Ethics:

Engineers, in the fulfillment of their professional duties, shall Act for each employer or client as faithful agents or trustees.



Engineering Ethics

Section I.5. - Code of Ethics:

Engineers, in the fulfillment of their professional duties, shall avoid deceptive acts.



Engineering Ethics

Section II.1.b. - Code of Ethics:

Engineers shall approve only those engineering documents that are in conformity with applicable standards.



Engineering Ethics

Section II.1.c. - Code of Ethics:

Engineers shall not reveal facts, data, or information without the prior consent of the client or employer except as authorized or required by law or this Code.



Engineering Ethics

Section II.1.d - Code of Ethics:

Engineers shall not permit the use of their name or associate in business ventures with any person or firm that they believe is engaged in fraudulent or dishonest enterprise.



Engineering Ethics

Section II.1.e - Code of Ethics:

Engineers shall not aid or abet the unlawful practice of engineering by a person or firm.



Engineering Ethics

Section II.1.f. - Code of Ethics:

Engineers having knowledge of any alleged violation of this Code shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.



Engineering Ethics

Section II.3.a. - Code of Ethics:

Engineers shall be objective and truthful in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony, which should bear the date indicating when it was current.



Engineering Ethics

Section III.1. - Code of Ethics:

Engineers shall be guided in all their relations by the highest standards of honesty and integrity.



Engineering Ethics

Section III.1.b. - Code of Ethics:

Engineers shall advise their clients or employers when they believe a project will not be successful.



Engineering Ethics

Section III.3.a. - Code of Ethics:

Engineers shall avoid the use of statements containing a material misrepresentation of fact or omitting a material fact.



Engineering Ethics

Section III.4. - Code of Ethics:

Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.



Engineering Ethics



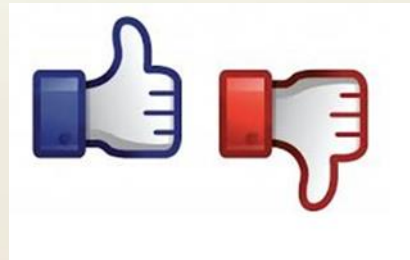
- Engineer A has an obligation to discuss with Smith his concerns regarding the current failure of the water testing equipment to meet the regulatory standards and to develop a plan and agreement with Smith prior to their meeting with the regulatory authority on how and when they would achieve compliance. By pursuing this approach, it is the Board's view that Engineer A would be taking steps to protect the public health and safety in an honest and forthright way, preserve the company's confidentiality and act as a faithful agent and trustee to the company. If Smith ignores Engineer A's recommendation, then Engineer A should report the concerns to Smith's supervisor. Additionally, Engineer A should report and recommend investigation of in-house testing issues to determine the reason for the discrepancy.

Engineering Ethics

Polling Question:

Regardless of the facts and circumstances, engineers should only report ethical concerns within their organization and should not go outside of their organization except in very rare instances since going outside of the organization is an act of disloyalty and could create legal liability.

- 1. Agree
- 2. Disagree
- 3. Not Sure



Engineering Ethics

Professional Selection— Receipt of Submission Beyond the Published Deadline

Case No. 16-3



Engineering Ethics

Facts:

- Engineer A works for a public agency in City X. City X is seeking the services of a qualified engineering firm and is using QBS for the design of the new public building. Engineer A is the point of contact on the City X QBS Review Team for this project.



Engineering Ethics

Facts:

- City X conducted a mandatory pre-submittal meeting and received initial interest from 14 different firms. Thereafter, City X published the date, time and location of the submittal for the Statements of Qualifications (SOQ's) indicating all submittals must be received by the City in the City Clerk's Office by no later than 10:00 am on January 30th. The date, time and location was also listed in the City's RFQ Web Page and was on the hard copy agenda that was distributed at the Pre-Submittal Meeting.



Engineering Ethics

Facts:

- Engineer A returned to his office in the afternoon on January 30th and as was intercepted by the City Manager's Administrative Assistant who had a large envelope bearing Engineer A's name and the letterhead of Firm B, one of the firms who had attended the Pre-Submittal Meeting and which had performed well on several other engineering design projects for the City. The envelope was date and time-stamped to indicate that the submittal was received on January 30th at 2:05 pm in the City Manager's Office.



Engineering Ethics

Question:

- What are Engineer A's ethical responsibilities under the circumstances?



Engineering Ethics

Section II.3. - Code of Ethics:

Engineers shall issue public statements only in an objective and truthful manner.



Engineering Ethics

Section II.3.a. - Code of Ethics:

Engineers shall be objective and truthful in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony, which should bear the date indicating when it was current.



Engineering Ethics

Section III.1 - Code of Ethics:

Engineers shall be guided in all their relations by the highest standards of honesty and integrity



Engineering Ethics

Conclusion



- Engineer A should return the submittal to Firm B unopened with the explanation that the bid was received late.

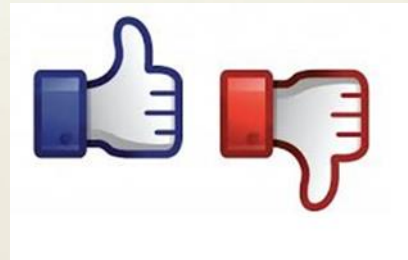


Engineering Ethics

Polling Question

Under the facts, if the submission was received on a timely basis (e.g., on January 30th before 10:00 am) but at the City Manager's Office instead of the City Clerk's Office as required, it should have accepted.

- 1. Agree
- 2. Disagree
- 3. Not Sure



Engineering Ethics

Advertising—Omitting Geographic Address

Case No. 16-6



Engineering Ethics

Facts:

- Engineer A is a professional engineer licensed in State X and is a sole practitioner with no employees. Engineer A's professional business card lists Engineer A's name, the name of Engineer A's engineering company, Engineer A's e-mail address, Engineer A's phone number, Engineer A's website, but does not list any geographic address or the state(s) in which Engineer A is licensed. Engineer A distributes his professional business card to a potential client in State X.



Engineering Ethics

Question:

- Is it unethical for Engineer to not include a geographic address or the state(s) in which Engineer A is licensed on Engineer A's business card?



Engineering Ethics

Section I.5. - Code of Ethics:

Engineers, in the fulfillment of their professional duties, shall avoid deceptive acts.



Engineering Ethics

Section II.5.a. - Code of Ethics:

Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications. They shall not misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments. Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint venturers, or past accomplishments.

Engineering Ethics

Section III.3. - Code of Ethics:

Engineers shall avoid all conduct or practice that deceives the public.



Engineering Ethics

Section III.8.a. - Code of Ethics:

Engineers shall conform with state registration laws in the practice of engineering.



Engineering Ethics

Con**clu**sion

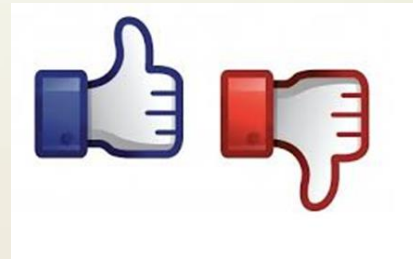
A magnifying glass with a black handle and a silver rim is positioned over the word 'Conclusion'. The lens of the magnifying glass is centered over the letters 'clu' in the word, making them appear larger and more prominent than the rest of the word.

It is not unethical for Engineer A to not include a geographic address or the state(s) in which Engineer A is licensed on Engineer A's business card.

Engineering Ethics

Polling Question:

- With the increasing use of electronic communications, and marketing techniques, the engineering profession will need to explore newer ways to regulate the practice of engineering in the future to better accommodate the changing business and employment landscape.
- 1. Agree
- 2. Disagree
- 3. Not Sure



Engineering Ethics

“Expert Witness— Discovery of New Data Following Submission of Report”

Case No. 16-7



Engineering Ethics

Facts:

- Engineer A is a professional engineer. Part of Engineer A's duties is to perform forensic engineering services for attorneys in connection with pending litigation.
- Engineer is retained by Attorney X to perform a forensic engineering investigation and prepare a written report in connection with a mechanical product failure which resulted in extensive injuries to the Attorney's client.



Engineering Ethics

Facts:

- Engineer conducts the investigation for Attorney X, prepares the written report along with conclusions regarding the cause of the accident and submits the written report to Attorney X. Attorney X is in the process of settlement negotiations with the defendant's attorney in the case.
- Following Engineer A's investigation and Engineer A submitting the report to Attorney X, but before the settlement negotiations are concluded, Engineer A discovers that the data upon which Engineer A based his report conclusions was inaccurate and that if the more accurate data had been used in his investigation, Engineer A's conclusions would be different.



Engineering Ethics

Question:

- What are Engineer A's ethical obligations under the circumstances?



Engineering Ethics

Section III.1.a. - Code of Ethics:

Engineers shall acknowledge their errors and shall not distort or alter the facts.



Engineering Ethics

Section III.1.b. - Code of Ethics:

Engineers shall advise their clients or employers when they believe a project will not be successful.



Engineering Ethics

Section III.3.a. - Code of Ethics:

Engineers shall avoid the use of statements containing a material misrepresentation of fact or omitting a material fact.



Engineering Ethics



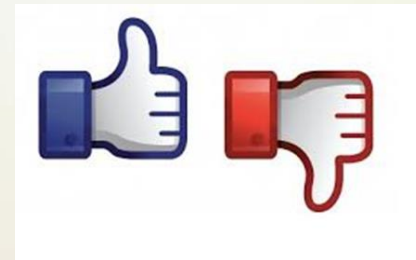
Engineer A had an affirmative obligation to step forward and immediately advise Attorney X. Since Attorney X was in the middle of negotiations with the defendant's attorney which may or may not have resulted in a settlement of the case, this was critically important information for Attorney X to have in his possession.

Engineering Ethics

Polling Question

Under the facts, in my opinion, once Engineer A advised Attorney X of the revised data, Engineer A's ethical obligations were fulfilled.

1. Agree
2. Disagree
3. Not Sure



Engineering Ethics

Review of Key Issues



Engineering Ethics

- It is important to study engineering ethics because it is critical to understand the standards governing what is acceptable behavior in the practice of engineering.
- It is important to practice engineering ethically because if you do not, the following could occur - personal injury, property damage, disciplinary action, impact on the reputation or the employer, clients, profession and possible loss of job or business.
- Engineers having knowledge of any alleged violation of this Code should report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.



Engineering Ethics

- Among the universal ethical values are honesty, integrity, promise-keeping, fidelity, fairness, respect for others, responsible citizenship, pursuit of excellence and accountability.
- Black and white areas – right vs. wrong issues are easiest to resolve.
- Other factors such as time, money, family, career, reputation affect ethical decision-making.



Engineering Ethics

**Thank
You!**

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Engineering Ethics: Public Health, Safety, and Welfare

To receive credit for this course, each registrant will need to take the quiz below and pass with a score of 70 or above. Click link

<http://quiz.nspe.org/quiz/2017springethics1.aspx>

to take the quiz.



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Engineering Ethics: Public Health, Safety, and Welfare

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to take a short survey.**