Online Ethics Center
FOR ENGINEERING AND SCIENCE

Engineering and Legal Issues Bibliography

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Description

This bibliography covers a number of legal issues that arrise in engineering. It includes subsections on Animal Subjects, The Bidding Process, Bribery and Extortion, Accessible Design, Environmental Laws, Expert Witnesses, Intellectual Property & Patents, Human Subjects in Research, Product Liability, Public Safety, and Standards.

Body

Animal Subjects in Research

Animal Welfare Information Center - Research Animals
Collection of resources and links to federal regulations and guidelines relating to the use of animals in research. Compiled by the U.S. Department of Agriculture's National Agriculture Library.

Guide for the Care and Use of Labratory Animals
Published by the National Research Council, this is the basic guide for the proper care of animals used in research in the U.S. Can be read online through the National Academies Press web site.

Institutional Animal Care and Use Committees
Developed by the American Association for Laboratory Animal Science, this web site describes the role IACUCs play in approving research using animal subjects, and guidelines for IACUC committee members.

See also a larger bibliography of the ethics of the use of animal subjects in research on this site.

Bidding Process

Barrios, Ruben. Government contracts and contractor behavior. *Journal of Business Ethics. 63(2):* 119-130.
The U.S. government embraces the concepts of privatization and market competition, but while the contracting system is supposed to be open and competitive, in recent years the government has often awarded contracts with little or no competitive bidding. These are often cost-plus type contracts that force the government to assume more of the risk, and lacked efficiency in monitoring and overseeing private contractors. Discusses the ethical implications of this trend, and potential regulations that could help reduce this practice.

Stout, Bruce. 1995. Is competitive price bidding for professional services ethical? Another view. *Journal of Professional Issues in Engineering Education and Practice.* 121(4):256-58.

This short article discusses the ongoing debate about competitive price bidding that has continued from 1978 until now, after the U.S. Supreme Court ruled that codes of ethics such as the NSPE and ASCE codes unfairly restrain trade by preventing customers from making price comparisons in the initial selection of an engineer, and impose the NSPE's views of the costs and benefits on the marketplace. The author argues that ASCE should, in its ethical standards, strive for a code of conduct that exceeds the standard considered to be unlawful. Otherwise, ASCE will be put in the position of considering such a prohibition as ethical, but which the courts consider unlawful, meaning that ASCE's ethics do not even reach the level society places on all citizens.

Schwartz, Arthur. 2004. Ethics in competitive bidding and contracting. *Science and Engineering Ethics.* 10(2): 277-282.

Today the concept of ethics in connection with competitive bidding and contracting may seem like a contradiction in terms. In recent times, ethics has generally been viewed as being concerned almost exclusively with fundamental principles relating to obligations to protect the public and safety, high standards of honesty, integrity, impartiality, fairness, and equity. In contrast, competitive bidding and contracting generally have been considered exclusively "market driven" concepts based solely on financial and commercial considerations without serious regard to ethical principles, except to the extent that some business practices may have legal or regulatory compliance ramifications.

Bribery and Extortion

Bribery in International Business – Organization for Economic Co-operation and Development

Resources from the Organization for Economic Cooperation and Development including recent reports from the OECD Anti-Bribery Convention and anti-bribery recommendations for companies to help them develop effective measures to help prevent and detect the bribery of foreign public officials in their international business transactions.

Corruption and Bribery – U.S. Department of State

A web site put together by the U.S. Department of State containing documents, reports and other online resources related to combating international bribery and corruption.

Pritchard. Michael S. 1998. Bribery: the concept. *Science and Engineering Ethics* 4(3): 281-286.

The aim of this paper is to clarify the concept of bribery and to do this in a way that reveals its underlying normative features. The author discusses why, even in the situation of bribing a Nazi guard to allow concentration camp prisoners to escape, a moral justification is needed. Bribery itself is not morally neutral as it entices people to violate what they take to be their positional duties.

Unger, Stephen. 1998. Ethical aspects of bribing people in other countries. *Science and Engineering Ethics* 4(3): 287-290.

The author argues against assumption that individuals and organizations doing business in countries where corruption is prevalent should not be expected to adhere to strict standards of ethical practice. The author looks at the universal basis of ethics, and the long-range advantages for avoiding unethical conduct such as the giving of bribes for businesses and engineering employees.

Zucker, Arthur. 2000. Bribery and extortion: Can restaurants help? *Science and Engineering Ethics.* 6(2): 197-204.

The author discusses the differences between tipping, bribery, and extortion and uses the example of leaving each in a restaurant to show the differences that exist.

Designing for Accessibility

Information and Technical Assistance on the Americans with Disabilities Act

This web site, maintained by the U.S. Department of Justice includes a guide to federal laws that cover the rights of individuals with special needs, as well as information about accessible design standards for new buildings being constructed for commercial or public use.

Section 508.gov

Developed by the U.S. General Services Association's IT Accessibility and Workforce

agency, this web site provides information for web developers, employers, and individuals with disabilities about Section 508 of the Rehabilitation Act which was enacted to help eliminate barriers in information technology, open new opportunities for people with disabilities, and encourage development of technologies that will help achieve these goals. It includes laws, policies and standards as well as a large collection of links to technology tools and resources for both developers and users of information technology.

W3C Web Accessibility Initiative

The World Wide Web Consortium is organization that seeks to develop standards for web pages and browsers, and has been a leading voice in developing standards that web designers can use to make sure their site is accessible to people with special needs.

Adam, Alison and David Kreps. 2006. Enabling or disabling technologies? A critical approach to web accessibility. *Information Technology & People.* 19(3): 203-218.
This article provides an analysis of the continuing problem of web accessibility for disabled people. The authors discuss the need for web developers to develop an understanding of how the social construction of a disability model may tend to mask the embodied, lived experience of disability, and how this understanding can help designers make the web more accessible for all.

Harris, Jennifer. 2010. The use, role and application of advanced technology in the lives of disabled people in the UK. *Disability and Society.* 25(4): 427-439.
This study explores why many technologies designed to assist disabled people are often abandoned early and remain unused, how advanced technologies can rise to the challenges of flexibility and user choice, which applications enhance independence and improve quality of life, and what barriers are there to take-up and future utilization. The study found that the cost of both mainstream and "specialist" devices are prohibitive, and recommends that engineers focus on developing more cost-effective assistive technologies that enhance the independence of users, and to let their research be guided by the needs of disabled people, collectively and individually.

Vilar, Elisangela, Ernesto Filguerias, and Francisco Rebelo. 2007. Integration of people with disabilities in the workplace: A methodology to evaluate the accessibility degree. *Occupational Ergonomics.* 7(2): 95-114.
Describes a methodology that can be used to evaluate the accessibility design in companies, so the company and employee workstations are accessible for individuals with physical, sensual and cognitive disabilities. . The authors of this methodology have developed a guide based on this methodology, and describe how it was evaluated in a large company and implemented in Portugal through the INCLUDE program.

Zolna, Jesse S., John Sanford, Dory Sabata and John Goldthwaite. 2007. Review of accommodation strategies in the workplace for persons with mobility and dexterity impairments: application to criteria for universal design. *Technology & Disability.* 19(4): 189-198.
Presents a literature review of knowledge regarding the accommodation of personals with mobility and dexterity impairments in the workplace environment and use of this knowledge to inform universal design. The authors discusses how changes in the physical work environment, assistive technologies and other methods can help push forward future research in accommodating persons with physical impairments and the future practice of universal design in the workplace.

Environmental Laws

Gorman, Michael E. Matthew M. Mehalick, and Patricia Werhane. 2000. *Ethical and environmental challenges to engineering.* Upper Saddle River, N.J.: Prentice Hall.
This book features full-length, multi-faceted, real-life cases of design and managerial dilemmas involving environmental ethical dilemmas in a variety of settings--together with background readings that illustrate how one can integrate ethical and environmental challenges into engineering decisions, especially early in the design process.

Salzman, James. and Barton H. Thompson*. Environmental Law and Policy*. New York: Foundation Press, 2006.
This book discusses the major themes and issues that cross cut environmental law, first giving a brief history of environmentalism in America and following this with an

exploration of the importance and implications of basic themes that occur in virtually all environmental conflicts. The authors discuss the three dominant perspectives that drive policy development – environmental rights, utilitarianism, and environmental justice- and discusses the substance of environmental law, with separate sections on each of the major statutes in the U.S. and international environmental issues such as ozone depletion, climate change and trans-boundary waste disposal.

Sullivan, Thomas F. P. 2005. *Environmental Law Handbook.* Rockdale, MD: Government Institutes.
In its 18th edition, this volume discusses all major environmental regulations in the United States and provides legal insight into understanding the requirements of environmental laws. Includes text of major environmental laws and related case studies and court decisions.

Vallero, Daniel. 2004. *Environmental Contaminants: Assessment and Control*. Boston: Academic Press.
This book provides environmental professionals with the information they need to assess environmental risks and begin cleaning up environmental problems in air, water, soil, sediment and living systems. The book provides readers with an overview of public policy regarding waste management, and suggested solutions of ways to control and reduce risks in a number of differing situations. It also includes a series of case studies to illustrate and provide solutions to ethical dilemmas that often arise in environmental risk management.

Expert Witnesses

Carper, Kenneth L. 1990. Ethical considerations for the forensic engineer serving as an expert witness. *Business and Professional Ethics Journal.* (Spring Summer 1990): 21-34.
The professional engineer serving as an expert witness plays an essential role on the resolution of disputes involving technical engineering matters. The author discusses the importance of being mindful towards bias when serving as an expert witness, the great responsibility that this role entails, and guidelines that have been established by a number of professional engineering societies governing engineers serving as expert witnesses.

Goodwin, Kenneth. 2010. How to be an effective expert witness. *Proceedings of the World Environmental and Water Resources Congress 2010: Challenges of Change .* 371(10): 171-180.
The author discusses how engineers want to be careful not to become known to the legal community as a "professional expert" whose main source of income comes from being an expert witness, and whose professional opinion is "for sale" and not independent.

Lux, William J. 1995 *An Engineer in the Courtroom.* Warrendale, PA: Society of Automotive Engineers.
As engineers may find themselves involved in litigation for reasons such as being an expert witness, product liability and accident investigation cases, this volume seeks to help engineers do a proper and professional job when involved in these kinds of cases.

Weil, Vivian. 2001. *Trying Times: Science and Responsibilities After Daubert.* Chicago: Center for the Study of Ethics in the Professions.
Can judges make responsible decisions about what scientific evidence is admissible in court? When is expert witnessing unethical? How can courts respect scientific standards while pursuing justice? These are some of the questions that direct attention to responsibilities of the professionals in legal cases requiring evidence from experts. This books attempts to find answers to these questions, and is likely to be of interest to scientists, lawyers, engineers, and researchers in medicine at this intersection of law and science.

Intellectual Property & Patents

Gurry, Francis. 2005. The growing complexity of international policy in intellectual property. *Science and Engineering Ethics.* 11(1): 13-20.
This article summarizes the effect that the TRIPs agreement has had on intellectual policy and patent law on an international level, and what these chances may mean for engineers, scientists, and businesses.

Laney, Orin E. 2001. *Intellectual Property and the Employee Engineer*. Washington D.C.: Institute of Electrical and Electronics Engineers Inc.
This is a short guide for engineers employed by a company discussing applicable intellectual property law, the implications of agreements that employers often ask

engineers to sign to protect the company's intellectual property rights, and employment strategies for creative engineers looking protect their intellectual property.

Resnik, David. 2003. A pluralistic account of intellectual property. *Journal of Business Ethics.* 46(4)319-335.
After exploring six different approaches to protecting intellectual property, the author argues that none of these accounts provide an adequate justification of intellectual property laws and policies because there are many different types of intellectual property and a variety of incommensurable values play a role in the justification of intellectual property. The best approach to intellectual property is to assess and balance competing moral values in light of the particular facts and circumstances.

Rothe, Christopher. 2006. Using patents to advance the civil engineering profession. *Civil Engineering.* 76(6) 66-73.
Discusses how by obtaining patents, civil engineers can protect their inventions and encourage others within the profession to device better solutions to today's problems.

Samuelson, Pamela. 2002. Reverse engineering under siege. *Communications of the ACM.* 40(10): 15-20.
Discusses if reverse engineering is a lawful way to acquire trade secrets embodied in mass-market products.

Teska, Kirk. 2008. The poor man's patent. *IEEE Spectrum.* 45(8): 23.
The article reports on the importance of the patent application to protect the invention. It mentions that once the patent application is filed, an invention can be disclosed or sold without fear of losing patent rights, so long as a full utility patent application is filed within a year of the provisional. Moreover, design patents allow the investors to save the cost of a patent by simply relying on copyright or trade secret protection.

Weil, V, and J. W. Snapper , eds. 1989. *Owning scientific and technical information : Value and ethical issues.* New Brunswick, NJ: Rutgers University Press*.*
A collection of essays discussing issues involving intellectual property in engineering and science. Discusses issues relevant to universities, industries, and issues

involving university/industry collaborations.

Zandvoort, H. 2005. Good engineers need good laws. *European Journal of Engineering Education.* 30(1): 21-36.
This article looks at how contemporary legal systems in some instances can limit the ability of engineers to perform their profession in a ethical or socially responsible way, or who wish to contribute positively to human well-being through their professional work. The author analyzes the legal stipulations governing secrecy, liability and responsibility of and within hierarchical organizations and discusses how areas of these laws could be changed to safeguard and allow the ethical and socially responsible conduct of engineers.

Human Subjects in Research

Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research
Published in 1979, the Belmont Report lays out the basic ethical principles that should underlie the conduct of biomedical and behavioral research involving human subjects in the U.S.

Declaration of Helsinki
Developed by the World Medical Association, this statement has largely replaced the Nuremberg Code as the current international standard for experimentation using human subjects.

Federal Policy for the Protection of Human Subjects (Common Rule)
Legislation adopted by the United States governing all research involving human subjects done by or funded by federal departments or agencies.

International Ethical Guidelines for Biomedical Research Involving Human Subjects
Developed by the Council for International Organizations of Medical Sciences, these guidelines lay out internationally-accepted standards for research involving human subjects.

Nuremberg Code
This statement arose from the Nuremberg Military Tribunal after WWII. It states that

human experimentation is only justifiable if its results benefit society, and if it is carried out in accord with basic ethical and legal principles.

U.S. Office of Human Research Protections
The U.S. OHRP is charged with interpreting and overseeing the implementation of all regulations regarding the protection of human subjects. Includes links to ethical guidelines and regulations, fact sheets, and policy statements of the NIH.

For more information on research involving human subjects, please visit our Human Subjects & Informed Consent Bibliography.

Product Liability

Bakker, Willem and Michael Loui. 1997. Can designing and selling low-quality products be ethical? *Science and Engineering Ethics.* 3(2): 153-170.
The paper examines the ethics of designing and selling safe, low-quality products. The author uses the Consumer-Oriented Process principle: "to place an increase in the consumer's quality of life as the primary goal for producing products," and how this principle can be used in this instance.

Danley, John R. 2005. Polishing up the Pinto: Legal liability, moral blame, and risk. *Business Ethics Quarterly.* 15(2): 205-236.
Revisiting the Ford Pinto case, the author uses this case to explore broader issues of the logic of blame, the ascription of legal and moral responsibility, and product liability.

Loui, Michael. 1998. The engineer's responsibility for quality. *Science and Engineering Ethics* 4(3):347-350.
This paper offers a definition of quality for products, explains why engineers are morally responsible for quality, and outlines how engineers can fulfill this responsibility.

Noggle, Robet and Daniel E. Palmer. 2005. Radials, rollovers and responsibility: An examination of the Ford-Firestone case. *Journal of Business Ethics,* 56(2): 185-203.
In 2000, Firestone initiated one of the largest tire recalls in U.S. history, and many of these tires had been installed as original factory equipment of Ford Explorers. While

Firestone’s role in the case has been widely acknowledged, Ford executives have managed to deflect much of the negative attention away from their company. This paper discusses to what extent Ford can be held morally responsible, and more broadly how evolutions in technology and business relationships can affect issues of moral responsibility in business contexts.

Public Safety

Baum, Robert J. 1994. Engineers and the public: sharing responsibilities. In D.E. Wuest, ed. *Professional Ethics and Social Responsibility.* Lanham, MD: Rowman & Littlefield, 1994. 121-136.
This essay discusses the professional responsibility of engineers (indeed, of all professionals) to assist the general public to obtain information about risks associated with specific technological artifacts and systems that may be relevant to the public's health and welfare. However, the author argues that this does not mean that engineers should take a parental role. Individuals bear the primary responsibility for protecting their own interests, but engineers must take reasonable precautions ensure the safety of clients, workers, and the general public. The author also takes an in-depth look at engineering codes of ethics, and how they have dealt with engineers' responsibility for public safety over the past sixty years.

Koepsell, David. 2010. On genies and bottles: scientists’ moral responsibility and dangerous technology R&D. *Science and Engineering Ethics .* 16(1): 119-133.
Looking at real-world examples of science and technologies that have caused damage to humans and the environment, this author calls for scientists to reassess their moral culpability when researching fields whose impact may be catastrophic. The author considers examples such as smallpox research and the Australian “mousepox trick” as well as fictional and future technologies, and suggests how ethical principles developed in biomedicine can be adjusted for science and engineering in general.

Mcfarland, Michael C. 1986. The public health, safety, and welfare: an analysis of the social responsibility of engineers. *IEEE Technology and Society Magazine.* 5(4): 18-26.
Discusses the obligations engineers have to protect the public interest in the

creation and use of new technologies, by means of cases studies of engineers working in the nuclear power industry.

Pfatteicher, Sarah K. A. 2000. Walkways: tragedy and transformation in Kansas City. Forensic Engineering, Proceedings of the Second Forensic Congress. P.6.
Discusses the Kansas City Hyatt Regency Walkway Collapse and how this collapse provoked a large debate about the American Society of Civil Engineer's Ethics Code and engineers' responsibility to protect public safety.

Thompson, Paul. 1999. The ethics of truth – Telling and the problem of risk. *Science and Engineering Ethics.* 5(4): 489-510.
The author looks at the problem of explaining why truth-telling is problematic in reconciling expert and lay attitudes toward risk. Evaluating risk always incorporates an estimate of the reliability of information. Furthermore, the engineer is looked upon as trustworthy when they give their assessment of the potential risk.

Toole, Michael. 2007. Design engineers' responses to safety situations. *Journal of Professional Issues in Engineering Education & Practice.* 133(2): 126-131.
The article analyzes two safety situations that consulting design civil engineers often face, and how the decision criteria the engineer chooses would influence her decision. The article looks at the criteria the engineer may use - such as maximizing profits, complying with federal safety standard and complying with the American Society of Civil Engineering's Code of Ethics- and discusses how these analyses of different situations suggests the need for engineering firms to establish site safety-related policies and the changes that may be warranted in ASCE's Code of Ethics and the federal safety standards.

Standards

Shapiro, S. 1997. Degrees of freedom: the interaction of standards of practice and engineering judgment. *Science, Technology and Human Values.* 22(3): 286-316.
This article discusses the important role standards of practice play in the practice of engineering, or standards that govern how engineers and technologists go about designing and constructing artifacts and shape the exercise of practitioner

judgment. The author attempts to explore the importance of these standards by drawing examples from structural and software engineering.

Weil, Vivian. 1998. Professional standards: Can they shape practice in an international context? *Science and Engineering Ethics* 4(3): 303-314.
The article summarizes the career of a Russian engineer who practiced a century ago in Western Europe, to provide an example of how ethical standards can influence practice across national boundaries. An examination of his career and his conception of engineering, of the evolution of engineering standards and codes, and of the process of formulating codes in particular instances explains how international standards can shape practice in an international context.

Web sites of major standards:

1. American Society of Civil Engineers Codes and Standards
2. American Society of Mechanical Engineers Codes and Standards
3. Institute of Electrical and Electronics Engineers Standards Association
4. Society of Automotive Engineers International – Standards
5. ASTM International – Standards Worldwide
6. *One of the largest voluntary standards development organizations in the world, developing standards*
7. International Organization for Standardization
8. *The most widely recognized standard setting organization, to which many engineering societies, international governments, and other professional and industrial organizations look to for standards in their area of expertise.*

Rights

Resource Type

Bibliography

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Topics

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