



Online Ethics Center
FOR ENGINEERING AND SCIENCE

Three Teaching Case Studies of Accidents in Nuclear Energy Development in Japan

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Description

An essay describing three historical Japanese cases and their use in the development of ethics education in Japan.

Body

Although engineering ethics classes at technical institutes are common in the USA, they have been rare in Japan, and were very rare in 1996 when I was asked by the Kanazawa Institute of Technology to design, implement and teach a class on engineering ethics for undergraduate students. Hiroshi Iino "Teaching Engineering Ethics in Japan", International Conference of Engineering Education, Oslo, Norway, August 6-10, 2001, 8D2, pp 35-41 and revised version published in a special issue of the International Journal for Engineering Ethics (IJEE), in press..

The class was named as the "Society and Engineers" and more than 2500 students finished the class in 5 years. In teaching engineering ethics, the most effective way would be to utilize case studies of, say, "hero" engineers, engineering related accidents or conversely, unethical acts of engineers. Since Japanese society were confident of the ethical conduct of engineers and Japanese culture that does not generally expect individual heroes, acting on their own, to produce good outcomes,

stories of specific heroic conduct by engineers are rare in the literature. Thus I chose at the beginning of the class to focus on two cases in nuclear energy development by a governmental organization that exemplify the influence of engineering failure and unethical acts. I chose these two because the facts of those cases have been fairly well disclosed and analyzed and because the cases attracted wide public attention in Japan, due to the nature of the project. But in 1999, a more serious accident of atomic criticality occurred in a Japanese company and resulted in death of two workers. I added this case to the previous two. The analysis of these three cases provides engineering students with many useful lessons.

- [Case 1: Fire by Sodium Coolant Leak at Prototype Fast Breeder Reactor, Monju](#)
- [Case 2: Fire and Explosion at Bituminization Demonstration Facility in 1997](#)
- [Case 3: Criticality Accident at JCO in 1999](#)

These three cases supply students in the class with many lessons just explained. As engineering ethics education becomes more common in Japan, case studies of events in other setting, such as private companies, are being collected for use in engineering ethics classes. Most of these are in Japanese.

Notes

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Use of Materials on the OEC

Resource Type

Case Study / Scenario

Topics

Catastrophes, Hazards, Disasters

Community Relations
Public Health and Safety
Safety
Workplace Ethics
Case Study Method

Discipline(s)

Engineering
Nuclear Engineering
Teaching Ethics in STEM