

An Exercise in Scientific Integrity: Short Research Essays

Choose one of the research topics suggested below and write an analysis of the scientific integrity issues involved. Links have been provided to get your research started, but additional references may be necessary; be sure to cite all of your sources.

Consider the consequences of each issue, and justify your opinions on the importance of each issue. Are there any obvious solutions?

I. The Data Quality Act

This piece of legislation, hidden in a lengthy appropriations bill in 2000, opened the door to litigation that questions the validity of science used as the basis for new regulations. While its wording simply directs the White House Office of Management and Budget to issue guidelines “ensuring and maximizing the quality, objectivity, utility, and integrity of information . . . disseminated by Federal agencies,” the reality is that it has encouraged industry interests to halt or delay regulatory action by challenging the science.

Consider the use of the Data Quality Act in the case of atrazine regulation and the different standards that scientists and policy makers apply to the concept of uncertainty.

Starting points:

- Weiss, R. 2004. “‘Data quality’ law is nemesis of regulation.” *Washington Post*, August 16. Online at <http://www.washingtonpost.com/wp-dyn/articles/A3733-2004Aug15.html>.
- Project on Scientific Knowledge and Public Policy (SKAPP). Data Quality Act website. Online at http://www.defending-science.org/public_health_regulations/Information-Quality-Act.cfm.
- Union of Concerned Scientists. “Atrazine.” Online at http://www.ucsusa.org/scientific_integrity/interference/atrazine-and-health.html.

II. Scientific Integrity in the Courts

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993) the Supreme Court directed federal judges to serve as the “gatekeepers” of expert testimony, particularly focusing on that testimony’s “relevance” and “reliability.” Subsequent decisions in *General Electric v. Joiner* (1997) and *Kumho Tire v. Carmichael* (1999) clarified the *Daubert* ruling, making it difficult to overturn a trial judge’s decision about the admissibility of expert testimony, and affirmed that *Daubert* applies to all expert testimony, not just scientific testimony.

Look further into these rulings and the implications they have on a range of scientific evidence. In particular, consider the ability of judges to determine what is “reliable” and “relevant” science (and to expel all other expert testimony), trends in expert testimony since *Daubert*, and the possibly diminishing role of science in the courts.

Starting points:

- Project on Scientific Knowledge and Public Policy (SKAPP). Science in the Courts website. Online at <http://www.defendingscience.org/courts/Science-in-the-Courts.cfm>.
- Berger, M.A. 2005. "What has a decade of Daubert wrought?" *American Journal of Public Health* 95(S1):S59. Online at <http://www.defendingscience.org/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=2407>.
- Melnick, R.L. 2005. "A Daubert motion: A legal strategy to exclude essential scientific evidence in toxic tort litigation." *American Journal of Public Health* 95(S1):S30. Online at <http://www.defendingscience.org/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=2405>.

III. Case Studies

Choose one of the examples below and write a paper on the scientific integrity issues involved. Make sure to include background research, information on the health risks of the pollutant in question, and what consequences could result from scientific integrity being compromised.

1. **Mercury pollution.** Mercury is a neurotoxin that can cause brain damage and harm reproduction in women and wildlife. The nation's largest source of mercury air emissions—about 48 tons annually—is coal-fired power plants. Several scientific integrity issues have arisen from attempts to regulate these emissions, including the suppression of an independent scientific advisory panel and agency scientists being pressured to alter their findings.

Starting points:

- Union of Concerned Scientists. "Information on power plant mercury emissions censored." Online at http://www.ucsusa.org/scientific_integrity/interference/mercury-emissions.html.
- Environmental Working Group. "Mercury in seafood." Online at <http://www.ewg.org/issues/siteindex/issues.php?issueid=5010>.

2. **Asbestos pollution.** Asbestos is a fibrous mineral that was commonly used from the 1950s through 1970s in products including insulation and vehicle brake pads. Asbestos fibers, when inhaled or ingested, penetrate the soft tissues of the body and can cause several lung diseases and cancers. Recent scientific integrity issues related to asbestos include weakening protections for brake workers and putting World Trade Center rescue workers at greater risk of exposure.

Starting points:

- Schneider, Andrew. 2006. "Pressure at OSHA to alter warning – author of advisory on asbestos in brakes faces suspension for refusing to revise it." Baltimore Sun, November 20.
- Union of Concerned Scientists. "World Trade Center rescue workers believed EPA, ended up sick." Online at http://www.ucsusa.org/scientific_integrity/interference/ground-zero-air-pollution.html.
- Environmental Working Group. "Asbestos: Think again." Online at <http://ewg.org/reports/asbestos/facts>.