SCIENTIFIC INTEGRITY

SCIENCE COUNCIL
AUGUST 2018

"You are completely free to carry out whatever research you want, so long as you come to these conclusions."

SCIENTIFIC ETHICAL ISSUES

- Sun is the center of the solar system (16th century)
- …
- Embryonic stem cell research
- GMO crops
- Protecting endangered species
- Human impact on climate change
- Planetary Protection

NASA POLICY

- NASA has a formal policy on Scientific Integrity: NPD 1920.1 (2017)
- Accompanying NPD 1920.1 is a NASA Handbook: *The NASA Guidelines on Promoting Scientific and Research Integrity*

- The standards apply to basic research, applied research, technology development (including space flight projects)
- They apply to grants, contracts, partnerships, or other vehicles

WHAT IS "SCIENTIFIC INTEGRITY"?

NASA's workforce shall maintain the highest standards of scientific and technical integrity, complying with applicable Federal laws, Agency directives, and regulations.

These standards include:

- **selecting the most meritorious NASA research and development activities through open and fair competition, peer review and other appropriate merit review processes;**
- **and avoidance of actual and perceived conflicts of interest;**
- **avoiding fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results;**
- **openly sharing results and methods not subject to classification or privacy standards;**
- **disclosing assumptions and biases in sharing and applying scientific information and data; and**
- **acting honestly and transparently in using and serving on advisory committees and in engaging in professional development activities.**

SCIENTIFIC INTEGRITY LAPSES:

- Data manipulation
- Distorting scientific findings for professional, political, or other purposes
- Suppressing scientific findings
- Manipulating the scientific advisory process
- "Revolving door" between regulators and industry
- *Stifling travel and participation at scientific conferences*
- *Controlling contact with the media*
- Bias in grant proposal review process

- The rush to publish (for example: "cold fusion")

ROLES & RESPONSIBILITIES

- NASA Chief Scientist shall:
  - *Lead a triennial internal review to ensure NASA has appropriate standards*
  - Develop, maintain, and ensure access to a reference handbook
  - Work with Mission Directorate AAs, Center Directors, the JPL Director, and the heads of other NASA offices (and designated contacts) to ensure the NASA workforce (and external entities) are informed of NASA's policies and protocols
  - Consult with the General Consul about any potential conflicts between Federal laws, regulations, and policies and the (S&T Integrity) policies of external entities serving as NASA reviewers, or funding recipients

ROLES & RESPONSIBILITIES

- Mission Directorate AAs, Center Directors, JPL Director shall:
  - *Designate a point of contact for handling scientific or technical integrity issues (within the MD or Center)*
  - Develop and maintain processes to ensure the NASA workforce (and external entities) are informed of NASA's policies and protocols
  - Consult with the NASA Chief Scientist and General Consul about any potential conflicts between Federal laws, regulations, and policies and the (S&TI) policies of external entities serving as NASA reviewers, or funding recipients

ROLES & RESPONSIBILITIES

- Heads of all NASA Offices shall:
  - Fulfill the responsibilities ascribed to them by applicable laws, regulations, policies
  - Provide support as requested to the Chief Scientist for a triennial internal review to ensure NASA has appropriate standards
  - Should conflicts of interest arise, actively manage or eliminate the conflict.

ROLES & RESPONSIBILITIES

- NASA employees conducting research shall:
  - Become informed of and comply with NASA's policies and protocols.
  - Should conflicts of interest arise, actively manage or eliminate the conflict.

NO SPACE FOR AVIATION SAFETY AT NASA

Early in 2005, NASA quietly closed down an $11.3 million, state-of-the-art program (National Aviation Operations Monitoring System – NAOMS) designed to collect critical data on air travel safety. In four years of operation, the program compiled data from nearly 30,000 interviews with pilots, but then NASA abruptly buried their responses for two years, seemingly more concerned with protecting the airline industry from negative public opinion than protecting the public itself.

The AP filed a Freedom of Information Act (FOIA) request for the buried data, only to be denied by NASA because, in the agency's own words, the data "*could materially affect the public confidence in, and the commercial welfare of, the air carriers and general aviation companies*."

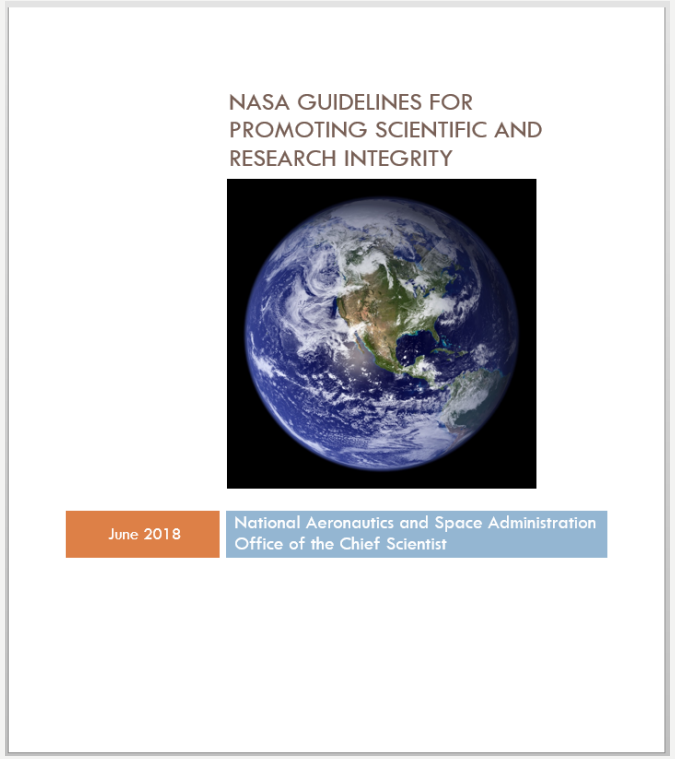
Media and Congressional pressure finally forced the agency to release the data in December 2007, but not before NASA officials deleted several components essential to scientific analysis.

According to Stanford professor in Humanities and Social Sciences Jon Krosnick, the lead consultant in developing and implementing the NAOMS survey methodology, *NASA removed so much information that a proper analysis of that data is now impossible.*

FOREST BROCHURE MISREPRESENTS SCIENCE TO PROMOTE LOGGING INITIATIVE

In 2004 the U.S. Forest Service (USFS) exaggerated the impact of forest fires on spotted owl habitat in an attempt to expand old-growth logging in the Sierra Nevada. In an effort to portray increased logging on public lands as a means of protecting animals from wildfires, the Forest Service released a controversial brochure titled Forests with a Future, in spite of biologists' disagreement about the fire-owl connection.

HANDBOOK ON SCIENTIFIC & RESEARCH INTEGRITY



*Available through NTRS server

DIVERSITY

PLACEHOLDER

TRAINING

TRAINING RESOURCES

- Released an implicit bias awareness video for evaluation panels
  - https://youtu.be/ll_qDLlue0I
- Various training videos and self learning materials located in SATERN
- Information and training resources on the ODEO MissionSTEM website
  - https://missionstem.nasa.gov/
- Contact your ODEO offices for a list of dynamic speakers and trainers who primarily focus on various aspects of diversity and inclusion
  - Recent HQ trainers: Verna Myers, Bruce Stewart, etc.