



National  
Center for  
Science  
Education

*Defending the teaching of evolution in the public schools*

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## Comments on Scientific Integrity regulations

The National Center for Science Education is a nonprofit organization dedicated to protecting the teaching of evolution, and to improving understanding of the nature of science. Attacks on the scientific integrity of federal policy pose great dangers to public understanding of science, and we applaud efforts to prevent such abuses. In particular, we hope that the resulting policies will protect the treatment of evolution and related scientific concepts in the federal government's important contributions to informal science education.

Informal science education occurs at parks, museums, and research centers, and includes signs and displays, public lectures or tours at such facilities, and websites and brochures which describe the research conducted at a site, or which provide background on an agency's research. Teachers, school groups and the general public rely on such material for accurate and unbiased scientific information. Such material therefore must reflect the generally accepted views of the scientific community, and indeed, in some federal agencies, this is required by existing statute or regulation. Omission and simplification is unavoidable in educational contexts, but scientifically and pedagogically valid content should not be altered for political or religious purposes. Peer review of educational content is appropriate and necessary; the reviewers should include both scientists and educators with experience in relevant fields. Science educators at federal sites must be protected against political or religious censorship.

Over the last several years, NCSE has monitored attacks on evolution and related concepts in several different federal agencies. Some examples illustrate the dangers and may suggest policies which would avoid similar problems.

There is a long-running conflict over a creationist book being sold in the science section of bookstores at Grand Canyon National Park, creating a conflict between the scientifically-oriented presentations of Park Service staff and an implied Park Service endorsement of erroneous scientific views. The federal government should not lend its credibility to material which falsely claims scientific support for a 6000 year-old Earth or other attempts to masquerade religious apologetics as science. It is appropriate to discuss religious views in publications, presentations, and other educational settings, but the integrity of the scientific process is compromised when descriptions of religious views are not clearly distinguished from empirically tested scientific results.

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A NASA public affairs officer ordered changes to the discussion of the Big Bang on NASA web pages, demanding that it be referred to as "a theory" because "it is not proven fact; it is opinion." The official also blurred the line between science and religion: "It is not NASA's place, nor should it be, to make a declaration such as this about the existence of the universe that discounts intelligent design by a creator." Making those changes would have misinformed the general public, including schoolchildren, about both cosmology and the scientific process. Agency websites, especially educational websites describing scientific research and scientific knowledge, should adhere to the highest standards of scientific accuracy, and should be free from political or religious pressure.

NCSE has received reports that interpreters at certain National Park Service sites were instructed to avoid discussing the (ancient) age of the Earth or the age of particular rock strata, to "avoid controversy." Of course, there is no scientific controversy concerning an ancient age of the Earth; the controversy was religious. School groups and the general public rely on programs at National Parks for accurate, unbiased information, and should be confident that scientific content will not be censored for religious reasons. Policies for public information programs must distinguish scientific controversy from political or societal controversy. Educational staff at parks or in other educational programs administered or funded by the federal government must not be restricted from discussing relevant science that is widely accepted by the scientific community. Where a topic is regarded as controversial, agencies should allow review by scientists and educators experienced in the topic and age groups at issue and should defend that peer reviewed content.

The Bureau of Indian Affairs and the Department of Defense directly administer schools, and the Department of Education supports teachers and administrators in schools nationwide. In schools administered by the federal government, as in all public schools, science classes must present science as it is understood and practiced by the scientific community. Science textbooks and other instructional materials ought to be subject to peer review and approval by educators who teach the subject at the same grade level. Scientific materials published by federal agencies for use in classrooms should be subject to peer review by scientists and teaching experts, and not subject to political or religious interference. In order to safeguard the integrity of the scientific process, instructional materials used by federal schools or provided to teachers by the federal government should describe the nature of science in clear terms, emphasizing that scientific explanations must be open to empirical testing and that they are evaluated by a community of scientists.

NCSE has received reports of teachers in Department of Defense schools teaching creationism, or being pressured not to teach evolution; this is a widespread problem in public schools, with 31% of respondents to an informal survey by the National Science Teachers Association reporting pressure not to teach evolution and 30% reporting pressure to teach creationism. Evolution is accepted by the scientific community as the foundation of modern biology, and must be the organizing principle of biology classes and biology instructional materials. In addition, federal schools must establish policies protecting teachers from pressure to omit or downplay evolution, or to teach religious alternatives to evolution, in science classes.

Establishing clear policies protecting the accuracy of formal and informal educational content provided by the federal government is necessary to ensure the long-term integrity of science. Such content prepares the next generation of federal scientists, and is vital to constituents as they evaluate science-based policies. In particular, agencies should develop policies that provide for scientists and educators to peer review material and to protect potentially controversial topics from political or religious pressure.