American Nuclear Society

10 Top Myths about Nuclear Energy

Myth: Americans get most of their yearly radiation dose from nuclear power plants.

Truth: We are surrounded by naturally occurring radiation. Only 0.005% of the average American's yearly radiation dose comes from nuclear power; 100 times less than we get from coal[1], 200 times less than a cross-country flight, and about the same as eating 1 banana per year[2].

Myth: A nuclear reactor can explode like a nuclear bomb.

Truth: It is impossible for a reactor to explode like a nuclear weapon; these weapons contain very special materials in very particular configurations, neither of which are present in a nuclear reactor.

Myth: Nuclear energy is bad for the environment.

Truth: Nuclear reactors emit no greenhouse gasses during operation. Over their full lifetimes, they result in comparable emissions to renewable forms of energy such as wind and solar[3]. Nuclear energy requires less land use than most other forms of energy.

Myth: Nuclear energy is not safe.

Truth: Nuclear energy is as safe – or safer – than any other form of energy available. No member of the public has ever been injured or killed in the entire 50-year history of commercial nuclear power in the U.S. In fact, recent studies have shown that it is safer to work in a nuclear power plant than an office[4].

Myth: There is no solution for huge amounts of nuclear waste being generated.

Truth: All of the used nuclear fuel generated in every nuclear plant in the past 50 years would fill a football field to a depth of less than 10 yards, and 96% of this "waste" can be recycled[5]. Used fuel is currently being safely stored. The U.S. National Academy of Sciences and the equivalent scientific advisory panels in every major country support geological disposal of such wastes as the preferred safe method for their ultimate disposal[6].

1. National Council on Rad Protection and Measurements No. 92 and 95
2. CDR Handbook on Radiation Measurement and Protection
3. P.J. Meier, "Life-Cycle Assessment of Electricity Generation Systems and Applications for Climate Change Policy Analysis," 2002
4. Nuclear Energy Institute (http://www.nei.org)
5. K.S. Krane, *Introductory Nuclear Physics*, John Wiley and Sons, 1988

Myth: Most Americans don't support nuclear power.

Truth: In a survey conducted in September 2013, it was found that 82% of Americans feel nuclear energy will play an important role in meeting the country's future electricity needs, and half believe this importance will increase with time. In addition, 84% of respondents favor renewing operating licenses for nuclear power plants that continue to meet federal safety standards. Also, 77% believe that nuclear power plants operating in the United States are safe and secure, a four percentage point increase from last February[7].

Myth: An American "Chernobyl" would kill thousands of people.

Truth: A Chernobyl-type accident could not have happened outside of the Soviet Union because this type of reactor was never built or operated here. The known fatalities during the Chernobyl accident were mostly emergency first responders[8]. Of the people known to have received a high radiation dose, the increase in cancer incidence is too small to measure due to other causes of cancer such as air pollution and tobacco use.

Myth: Nuclear waste cannot be safely transported.

Truth: Used fuel is being safely shipped by truck, rail, and cargo ship today. To date, thousands of shipments have been transported with no leaks or cracks of the specially-designed casks[9].

Myth: Used nuclear fuel is deadly for 10,000 years.

Truth: Used nuclear fuel can be recycled to make new fuel and byproducts[10]. Most of the waste from this process will require a storage time of less than 300 years. Finally, less than 1% is radioactive for 10,000 years. This portion is not much more radioactive than some things found in nature, and can be easily shielded to protect humans and wildlife.

Myth: Nuclear energy can't reduce our dependence on foreign oil.

Truth: Nuclear-generated electricity powers electric trains and subway cars as well as autos today. It has also been used in propelling ships for more than 50 years. That use can be increased since it has been restricted by unofficial policy to military vessels and ice breakers. In the near-term, nuclear power can provide electricity for expanded mass-transit and plug-in hybrid cars. Small modular reactors can provide power to islands like Hawaii, Puerto Rico, Nantucket and Guam that currently run their electrical grids on imported oil. In the longer-term, nuclear power can directly reduce our dependence on foreign oil by producing hydrogen for use in fuel cells and synthetic liquid fuels.

6. *Progress Towards Geologic Disposal of Radioactive Waste: Where do We Stand?* Nuclear Energy Agency, OECD report, 1999
7. Questionnaire for September 2013: National Public Opinion Tracking Survey, Bisconti Research, Inc., http://www.nei.org/getattachment/099264f0-1543-43e5-82e1-bffe3cf9c2d9/Bisconti-PO_Questionnaire_0913.pdf?ext=.pdf
8. Chernobyl Forum reports 20-year findings, offers recommendations, Nuclear News, Oct-05
9. NRC: Transportation of Spent Nuclear Fuel, http://www.nrc.gov/waste/spent-fuel-transp.html
10. K.S. Krane, *Introductory Nuclear Physics*, John Wiley and Sons, 1988

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Communications & Outreach Department
555 North Kensington Ave.
La Grange Park, IL 60526-5592

708-352-6611 telephone

outreach@ans.org e-mail
www.NuclearConnect.org

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