

# Radiation Sources Range from Cigarettes to CT Scans

How many millisieverts are you getting? A special online-only addition to May 2011's [Graphic Science](#)

BY MARK FISCHETTI

Health ▾

Japan's [Fukushima Daiichi nuclear reactor accident](#) has focused new attention on how much ionizing radiation people are exposed to from different sources (see list below). By far the largest source is medical imaging technology (see "[Graphic Science: Exposed](#)" in the May 2011 issue). Americans, on average, are exposed to 3.1 millisieverts of radiation a year from natural background factors such as radon gas from the Earth and cosmic rays from the universe. Safety experts recommend the public receive less than one millisievert a year beyond that level, although they do not include medical procedures in that limit because the procedures may bring health benefits. Here's a list of common sources.

## Average Radiation Dose to Entire Body (millisieverts).

Natural background (U.S.) per year: **3.1**

Airport scanner (backscatter method): **0.0001**

Natural gas cooking per year: **0.0004**

Arm x-ray: **0.001**

Bone density x-ray: **0.001**

Highway travel per year: **0.004**

Dental x-ray: **0.005**

Domestic airline flight (five hours): **0.017**

Smoking one pack of cigarettes per day for a year: **0.36**

Mammogram: **0.4**

Fukushima emergency workers per *hour*: **1.0**

Brain CT scan: **2.0**

Thyroid scan (nuclear medicine): **4.8**

Brain scan(nuclear medicine): **6.9**

Pelvis CT scan: **10**

Coronary CT angiography: **16**

Astronaut on space station for one year: **72** *Sources: National Council on Radiation Protection and Measurements; RadiologyInfo.org*

**MARK FISCHETTI** has been a senior editor at *Scientific American* for 17 years and has covered sustainability issues, including climate, weather, environment, energy, food, water, biodiversity, population, and more. He assigns and edits feature articles, commentaries and news by journalists and scientists and also writes in those formats. He edits History, the magazine's department looking at science advances throughout time. He was founding managing editor of two spinoff magazines: *Scientific American Mind* and *Scientific American Earth 3.0*. His 2001 freelance article for the magazine, "[Drowning New Orleans](#)," predicted the widespread disaster that a storm like Hurricane Katrina would impose on the city. His video [What Happens to Your Body after You Die?](#), has more than 12 million views on YouTube. Fischetti has written freelance articles for the *New York Times*, *Sports Illustrated*, *Smithsonian*, *Technology Review*, *Fast Company*, and many others. He co-authored the book *Weaving the Web* with Tim Berners-Lee, inventor of the World Wide Web, which tells the real story of how the Web was created. He also co-authored *The New Killer Diseases* with microbiologist Elinor Levy. Fischetti is a former managing editor of *IEEE Spectrum Magazine* and of *Family Business Magazine*. He has a physics degree and has twice served as the Attaway Fellow in Civic Culture at Centenary College of Louisiana, which awarded him an honorary doctorate. In 2021 he received the American Geophysical Union's Robert C. Cowen Award for Sustained Achievement in Science Journalism, which celebrates a career of outstanding reporting on the Earth and space sciences. He has appeared on NBC's Meet the Press, CNN, the History Channel, NPR News and many news radio stations. Follow Fischetti on X (formerly Twitter) [@markfischetti](#)

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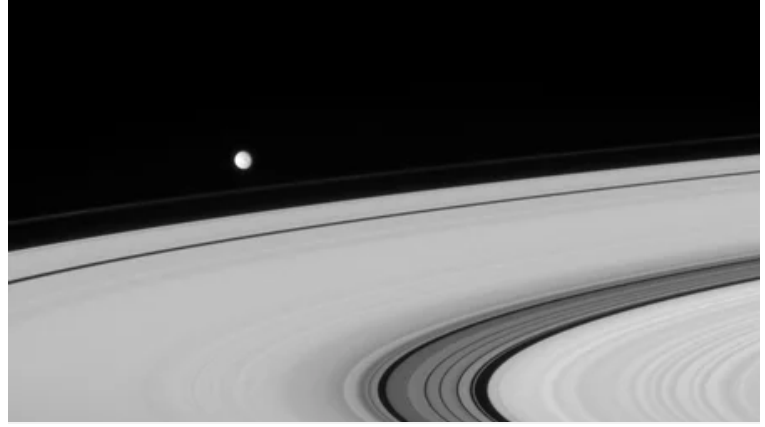


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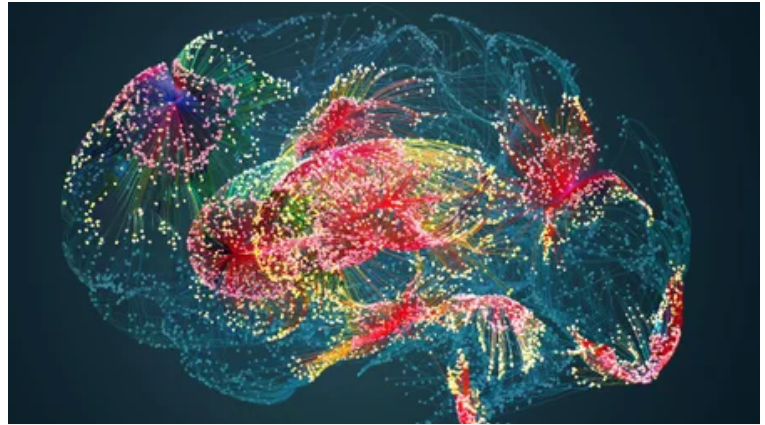


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