

# Radiation:



- ▶ We know you have questions. Here are some answers.

## Where Does Radiation Come From?

Radiation is measured in units called rem or millirem (1/1,000 of a rem).

If you're like most people, you're exposed to about 360 millirem each year. (Don't panic—that's a very small amount.) Natural background radiation (from the sun's cosmic rays, rocks, soil, radioactive potassium in our

### **Radiation**

**is easy to**

**detect, easy**

**to control.**

food and water, and radon in the air) accounts for an average of 300 millirem annually.

Natural radiation varies across the country, depending on altitude and the concentration of radioactive minerals in the ground. On coastal plains—like Florida—the average person gets about 280 millirem annually. At higher altitudes, where there is more exposure to cosmic rays—say, in Colorado—the average person gets about 350 millirem.

The different radiation levels have never been shown to have any health effects. Colorado residents aren't affected by natural radiation any more than people in Florida, even though Colorado has a higher radiation level.



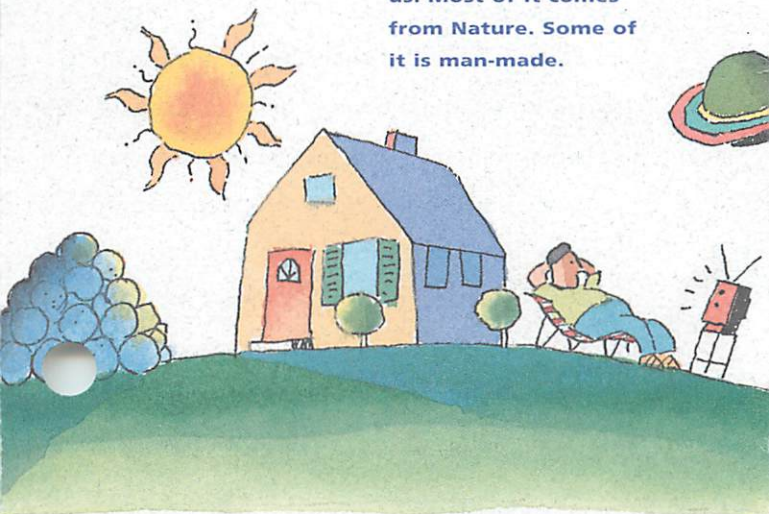
Natural background radiation is nearly 85 percent of our total annual exposure.

Where does the rest come from? You probably get about 50 millirem a year from X-rays and radioactive materials used for medical diagnosis and therapy. Another 10 millirem come from consumer products, like your household smoke detector, color television set, and luminous dial clock.

What's the difference between man-made and natural radiation? None. They're exactly the same.

Just how hazardous is radiation? Doses above 100,000 millirem can be harmful, sometimes even fatal. But scientists have never been able to detect any health or safety effects below 10,000 millirem.

**Radiation is all around us. Most of it comes from Nature. Some of it is man-made.**



## **The Government Sets Tough Controls**

The U.S. Environmental Protection Agency has set—and the Nuclear Regulatory Commission enforces—strict standards to protect the public from radiation. The people who live near nuclear power plants are exposed to much less radiation than the legal limit.

These tough regulations are based on the recommendations of respected scientific groups around the world.

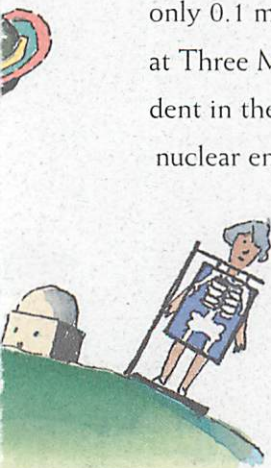
## **Nuclear Energy: No Radiation Risk**

More than 100 nuclear power plants provide about 20 percent of America's electricity—second only to coal.

Nuclear energy is generated from uranium, which becomes more radioactive when it's used in a nuclear power plant. But a nuclear plant's nearest neighbors will receive only 0.1 millirem per year. Even the accident at Three Mile Island in 1979, the worst accident in the history of U.S. commercial nuclear energy, caused an average exposure

of just 1.5 millirem to people within 50 miles of the plant—about what they'd get from a cross-country airplane flight.

All radioactive materials at nuclear power plants are handled



## Please Don't Pet The Pterodactyl

When some people think of radiation, they think of movie monsters like Godzilla, or the Incredible Hulk. Or comic book heroes like Spiderman.

And it's no wonder.

Books, movies and the news media often depict radiation as a mysterious, deadly force.

The truth is, there's nothing mysterious about radiation at all.


Scientists have been studying it for at least 100 years. They know how to detect, measure and control even the smallest amounts.

Today, all of us benefit from radiation and radioactive materials. They help treat cancer patients; test new medicines; generate pollution-free nuclear electricity; research cures for diseases like Alzheimer's, AIDS and diabetes; detect flaws in jet engines; control crop-devouring insects; power NASA space satellites and do hundreds of other jobs.

Radiation is like many other things: The more we understand it, the less



**Science fiction movies have left us with some funny ideas about radiation.**



frightening it becomes. And when it's controlled—which is easy to do—it's one of our most beneficial tools.

### **That Beeping...Could It Be You?**

Almost everything around us is radioactive: the soil, the rocks, the rivers and oceans, the foods we eat and the water we drink—even our own bodies.

How do we know? Because scientists have learned to detect even small amounts of radiation. If you're a fan of old Western movies, you may remember the prospectors' Geiger counters, that beeped near anything radioactive. The louder the beep, the more radioactivity.

Today, scientists and engineers usually use dosimeters. Dosimeters are more precise than Geiger counters. Workers at nuclear power plants, for example, always wear dosimeters on the job, to make sure they don't get too high a radiation dose.

As you can see, there's no guesswork when it comes to monitoring radiation levels. The men and women who work with radiation and radioactive materials receive extensive training and undergo constant supervision. At all times, they must comply with stringent state and federal regulations designed to protect themselves and the public.

in strict compliance with federal standards, so both the public and plant workers are protected. To make sure, the Nuclear Regulatory Commission has inspectors at each plant, to monitor operations every day.

## What Does This Mean For Me And My Family?

Like many other things—fire or toxic chemicals, for example—radioactivity requires caution.

The important thing to remember is that we can control it safely.

Does that mean we shouldn't be concerned about radiation? Absolutely not. But we shouldn't let healthy caution turn into irrational dread.

The beneficial uses of radiation—nuclear energy, cancer therapy, agricultural research, and many others—have

enriched our lives for decades. And because we know how to use radiation safely, it can benefit our children and grandchildren for many years to come.

### Typical Radiation Exposures

Millirem annually per individual, average per activity

<b>Nuclear Energy</b>	
Less than	0.1
<b>Consumer Products</b>	
Television less than	1.0
Others	0.3
<b>Social Activities</b>	
Mining and farming	2.0
Burning fuels	2.0
Water supply	3.0
Building materials	7.0
<b>Medical Procedures</b>	
Nuclear medicine	14
Diagnostic x-rays	40
<b>Natural Background</b>	
Food and water	40
Cosmic rays	27
Soil, rocks	28
Radon in the air	200

**We have other brochures like this one on other nuclear energy topics. Call or write us if you're interested.**

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