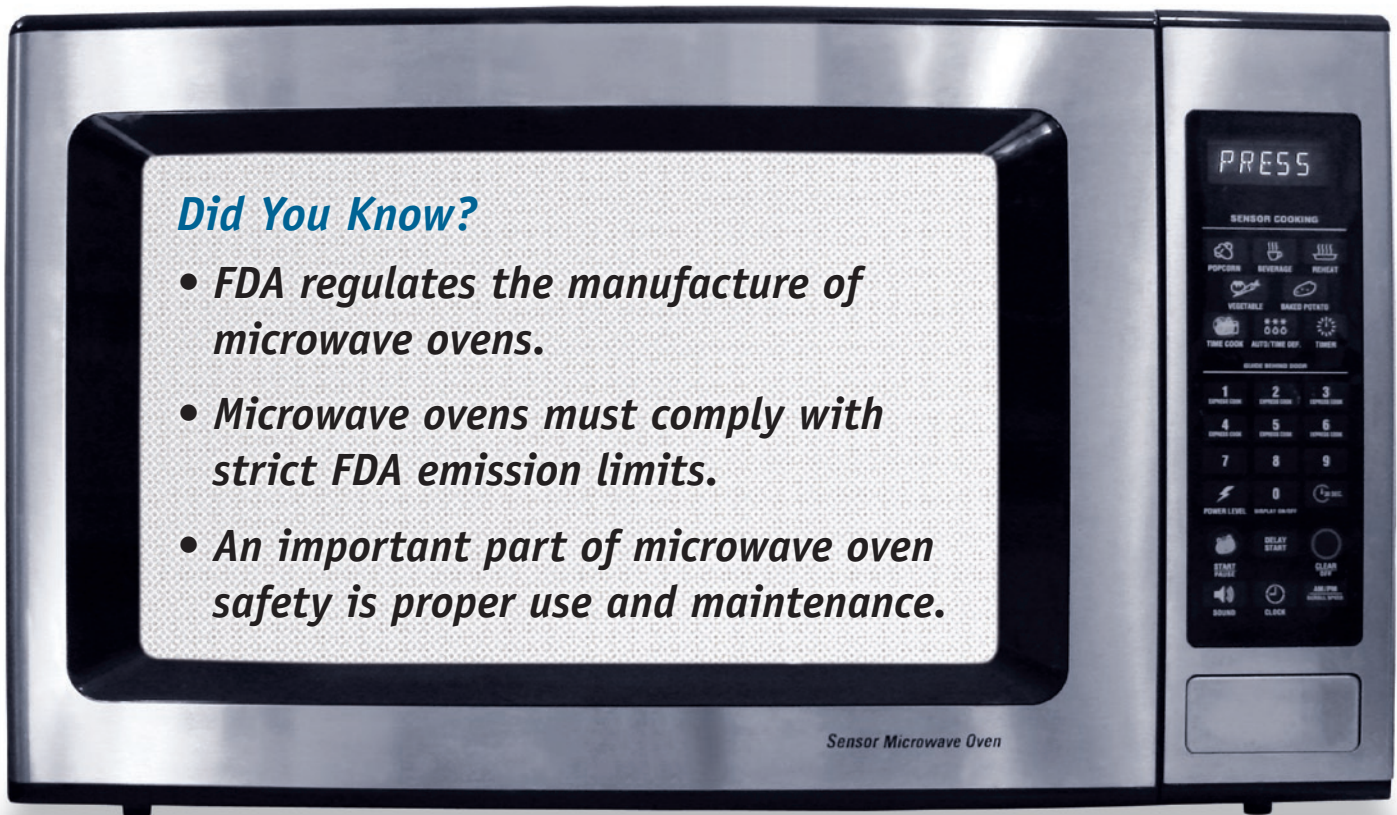


# Use Your Microwave Safely



## *Did You Know?*

- *FDA regulates the manufacture of microwave ovens.*
- *Microwave ovens must comply with strict FDA emission limits.*
- *An important part of microwave oven safety is proper use and maintenance.*

Photo: FDA/Michael Ermarth

The microwave oven has become a fixture of the American kitchen. According to *Appliance Magazine*, only DVD players and digital televisions were shipped out of U.S. factories in greater numbers than were microwave ovens and ranges during 2006.

FDA regulates the manufacture of microwave ovens and, under a strict safety standard, sets and enforces rules of performance to assure that radiation emissions do not pose a hazard to public health.

An important part of microwave oven safety is proper use and maintenance, as recommended by the user manual.

## *Don't operate a microwave oven if the door doesn't close firmly or is bent, warped, or otherwise damaged.*

Here is more information to help ensure safe use of your microwave.

### **How Microwaves Cook**

Microwave oven safety begins with understanding how these time- and energy-saving technological wonders work.

Microwaves—the actual waves produced by these ovens—are a type of electromagnetic radiation. These waves cause water molecules in food to vibrate. These vibrations, in turn, produce the heat that cooks the food.

The waves are produced by an electron tube within the oven called a magnetron. They are reflected within the oven's metal interior; can pass through glass, paper, plastic, and similar materials; and are absorbed by food.

Contrary to popular belief, microwave ovens do not cook food from the "inside out."

### **Microwave Ovens and Health**

Manufacturers must certify that their microwave ovens comply with strict FDA emission limits. The emission limits are well below the threshold for risk to public health.

Most injuries related to microwave ovens are the result of serious thermal burns from hot containers, overheated foods, or exploding liquids.

There have been extremely rare instances of radiation injury due to unusual circumstances or improper servicing.

### **Safety Tips for Operation**

- Follow the manufacturer's instruction manual for recommended operating procedures and safety precautions.
- Don't operate a microwave oven

if the door doesn't close firmly or is bent, warped, or otherwise damaged.

- Never operate a microwave oven if you have reason to believe it will continue to operate with the door open.
- Don't stand directly against a microwave oven (and don't allow children to do this) for long periods of time while it is operating.
- Refer to the instruction manual for your oven. Some microwave ovens should not be operated when empty.

### **What Else Should You Know?**

**Microwave-Safe Containers:** Use cookware that is specially manufactured for use in the microwave oven. Glass, ceramic containers, and all plastics should be labeled for microwave oven use. Generally, metal pans or aluminum foil should not be used. The microwaves reflect off them, causing food to cook unevenly and possibly damaging the oven.


**Erupted Hot Water Phenomena:** Hot-water eruption can occur if you use a microwave oven to super-heat water in a clean cup. ("Super-heated" means the water is hot beyond boiling temperature, although it shows no signs of boiling.)

A slight disturbance or movement may cause the water to violently explode out of the cup. There have been reports of serious skin burns or scalding injuries around people's hands and faces as a result of this phenomenon.

Adding materials such as instant coffee or sugar to the water before heating greatly reduces the risk of

hot-water eruption. Also, follow the precautions and recommendations found in microwave oven instruction manuals; specifically the heating time.

**Pacemakers:** Today's pacemakers are now designed to be shielded against electrical interference. Consult with your physician if you have concerns.

**Checking For Leakage:** There is little cause for concern about excess microwaves leaking from ovens unless the door hinges, latch, or seals are damaged. If you suspect a problem, contact the oven manufacturer; a microwave oven service organization; your state health department; or the closest FDA office, which you can locate online by visiting [www.cfsan.fda.gov/~dms/district.html](http://www.cfsan.fda.gov/~dms/district.html) 

### **For More Information**

FDA Center for Devices and Radiological Health  
[www.fda.gov/cdrh/consumer/microwave.html](http://www.fda.gov/cdrh/consumer/microwave.html)

[www.fda.gov/cdrh/radhealth/products/microwave.html](http://www.fda.gov/cdrh/radhealth/products/microwave.html)

U.S. Government Food Safety Web Site  
[www.foodsafety.gov/~fsg/jfs-mwave.html](http://www.foodsafety.gov/~fsg/jfs-mwave.html)