

5 Tips for Using Your Microwave Oven Safely

id you know the U.S. Food and Drug Administration regulates microwave ovens? Microwave oven manufacturers must certify their products meet safety performance standards created and enforced by the FDA to protect the public health.

Microwave ovens are generally safe when used correctly. But people have experienced burns, and in rare cases, other injuries from microwave radiation, particularly in cases involving improper use or maintenance. Therefore, always use your oven properly (read on for tips) and maintain it as recommended by the user manual.

How Microwaves Cook

First, know that 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 food.

The waves are produced by a vacuum 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.

Microwaves are a kind of non-ionizing radiation. They do not have the same risks as x-rays or other types of ionizing radiation. (Ionizing radiation is a more energetic type of radiation that can cause changes to human cells.)

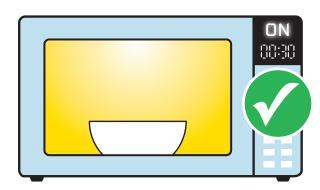
Injury Risks and Background on Microwaves

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

Most injuries do *not* relate to radiation. That said, there have been very rare instances of radiation injury due to unusual circumstances or improper servicing.

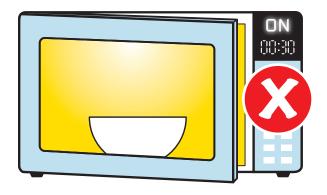
In general, these radiation injuries are caused by ex-

Safe Microwave Use



When you operate a microwave oven, the door should close and seal fully.

Unsafe Microwave Use



If the fan, light, or turntable operates when the door is open, do not use the oven. You can report the issue to the manufacturer or the FDA.

posure to large amounts of microwave radiation leaking through openings such as gaps in the microwave oven seals. However, FDA regulations require that microwave ovens are designed to prevent these high-level radiation leaks. In fact, manufacturers must certify



that their microwave ovens comply with specific FDA safety standards. These standards require any radiation given off by ovens to be well below the level known to cause injury.

Although some people have been concerned that microwave ovens could cause interference with certain electronic cardiac pacemakers, today's pacemakers are designed to shield against this interference. You can consult with your health care provider if you still have concerns.

Safety Tips

- 1. Follow the manufacturer's instructions for use. Directions in the user manual provide recommended operating procedures and safety precautions. For instance, you should not use some microwave ovens when they are empty. In addition, you should not heat water or liquids longer than the manufacturer's instructions and recommendations.
- 2. Use microwave-safe containers. Use cookware specially manufactured for use in the microwave oven. Generally, you should not use metal pans or aluminum foil because microwaves reflect off them, causing food to cook unevenly and possibly damaging the oven. And you should not use some plastic containers because heated food can cause them to melt. The FDA recommends using glass, ceramic, and plastic containers labeled for microwave oven use.
- 3. Avoid super-heated water. "Super-heated" means water is heated beyond its boiling temperature, without signs of boiling. If you use a microwave oven to heat water in a clean cup beyond the boiling temperature, 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 ingredients such as instant coffee or sugar to water before heating greatly reduces the risk of hotwater eruption. Also remember to follow the manufacturer's heating instructions.

4. Check for leakage. There should be little cause for concern about excess microwave radiation leaking from these ovens unless the door hinges, latch, or seals are damaged. The FDA recommends looking at your oven carefully to see if any of these issues exist. The agency also recommends that you do not use an oven if the door doesn't close firmly or is bent, warped, or otherwise damaged.

5. Don't use ovens that seem to operate when the door is open. The FDA monitors these appliances for radiation safety issues and has received increasing reports about microwave ovens that appear to stay on-and operate-when the door is open. The FDA recommends that you immediately stop using a microwave oven if this happens.

"A failure in the door sensing switch can sometimes allow the fan, light, and/or turntable to operate when the door is open. But safety interlocks in microwave ovens are intended to stop the magnetron from generating microwaves," explains Ting Song, Ph.D., a biomedical engineer with the FDA's Magnetic Resonance and Electronic Products branch. "When interlocks work normally, the magnetron will not operate. However, since each oven design is different, consumers cannot be 100 percent sure that microwave radiation is not being emitted in this situation."

How to Report Problems

In the FDA's experience, most microwave ovens that are tested show little or no detectable microwave leakage.

However, if your microwave shows signs of leakage or damage, or you suspect a radiation problem, you can contact the oven manufacturer. Manufacturers are required to tell the FDA about various issues, including defects in microwave ovens, lack of compliance with federal standards, and accidental radiation occurrences.

You also can report any suspected radiation-related problems or injuries directly to the FDA by completing and mailing the Accidental Radiation Occurrence Report form, available at:

http://www.fda.gov/downloads/AboutFDA/ ReportsManualsForms/Forms/UCM236066.pdf 🏻



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