

Microwave Ovens and Your Health

What is microwave radiation?

Microwaves are a form of electromagnetic radiation or waves of electrical and magnetic energy moving together through space. Electromagnetic radiation is generated during creation, transmission and use of electric power and electric devices. Microwaves should not be confused with x-rays.

What are the health effects of microwave ovens?

Exposure to high levels of microwaves can cause cataracts and alter or kill sperm, causing temporary sterility. However, correct use of a microwave oven in good repair will not cause these harmful effects. Of more concern are issues of uneven heating, which can cause:

- painful burn injuries either from hot food, splattering grease or steam;
- scalding if babies are given milk heated in a microwave oven;
- uneven cooking, leaving “cold spots,” where harmful bacteria can survive to cause food-borne illnesses.

Using plastic containers that are not microwave safe can also cause harmful additives and chemical components to leach from plastics into food.

What happens when microwaves cook foods?

Microwaves have three characteristics that allow them to be used in cooking: they are reflected by metal; they pass through glass, paper, plastic and similar materials; and they are absorbed by foods.

Microwaves are produced inside the oven by an electron tube. The microwaves bounce back and forth within the metal interior until they are absorbed by food. Microwaves cause the water molecules in food to vibrate,

producing heat that cooks the food. The microwave energy is changed to heat as soon as it is absorbed by food, so it cannot make food radioactive or “contaminated.”

There are no indications that microwave cooking reduces the nutritional value of foods any more than conventional cooking. In fact, foods cooked in a microwave oven may keep more of their vitamins and minerals, because microwave ovens can cook more quickly and without adding water.

What containers and wraps should be used?


Use only cookware that is labelled for use in the microwave oven. Microwave plastic wraps, wax paper, cooking bags, parchment paper, and white microwave-safe paper towels should be safe to use. Plastic storage containers and one-time-use containers should not be used in microwave ovens, as they can warp or melt, possibly causing harmful chemicals to migrate into the food. Do not use metal pans or aluminum foil because reflected microwaves cause uneven cooking and can damage the oven.

Tips for cooking or reheating food in the microwave

- Follow the manufacturer’s instructions for operating procedures and safety precautions.
- Do not use an oven if the door does not close firmly or is bent, warped or damaged.
- Do not allow anyone to stand directly against an oven while it is operating.
- Use only containers labeled “microwave safe” in the microwave oven. Do not reuse trays and containers that came with microwave convenience foods, as they may be designed for one-time use only.
- If plastic wrap is used, do not place it in direct contact with the food.
- Do not warm bottles and infant food in a microwave oven. Use running warm tap water instead.
- Do not allow preschool children to use microwave ovens. Closely supervise school-age children if they use a microwave oven.

Reference

Adapted from consumer information on microwave oven radiation prepared by the Food and Drug Administration, Center for Devices and Radiological Health.



CALIFORNIA
CHILD CARE
HEALTH
PROGRAM

California Childcare Health Program
UCSF School of Nursing
cchp.ucsf.edu
2004