



Microwaving food in plastic: Dangerous or not?

If you use e-mail, chances are you've received an urgent "PLEASE READ THIS!" message about the dangers of microwaving food in plastic containers or plastic wrap. The message warns that chemicals can leach out of the plastic and into the food, causing cancer, reproductive problems, and other ills. Is there any truth to this, or is it just another Internet-fueled "urban legend"? As is often the case with alarmist e-mails, this one contains a small kernel of truth — and a lot of misinformation.

Migrating chemicals

When food is wrapped in plastic or placed in a plastic container and microwaved, substances used in manufacturing the plastic (plasticizers) may leak into the food. In particular, fatty foods such as meats and cheeses cause a chemical called diethylhexyl adipate to leach out of the plastic. This certainly sounds scary, so it's little wonder that a warning is making its way across the Web.

But here's what the e-mails don't mention. The FDA, recognizing the potential for small amounts of plasticizers to migrate, closely regulates plastic containers and materials that come into contact with food. The FDA requires that manufacturers test these containers and that those tests meet FDA standards and specifications. It then review the test data before approving a container.

Some of these tests measure the migration of chemicals at temperatures that the container or wrap is likely to encounter during ordinary use. For microwave approval, the agency estimates the ratio of plastic surface area to food, how long the container is likely to be in the microwave, how often a person is likely to eat from the container, and how hot the food can be expected to get during microwaving. The scientists then measure the chemicals that leach out and the extent to which they migrate to different kinds of foods. The maximum allowable amount is 100–1,000 times *less* per pound of body weight than the amount shown to harm laboratory animals over a lifetime of use. Only containers that pass this test can display a microwave-safe icon, the words "microwave safe," or words to the effect that they're approved for use in microwave ovens.

What about containers without a microwave-safe label? Only those containers labeled "microwave safe" have been tested and found safe for that purpose. A container that's not labeled safe for microwave use isn't necessarily *unsafe*; the FDA simply hasn't determined whether it is or not.

The bottom line

Here are some things to keep in mind when using the microwave:

- Most takeout containers, water bottles, and plastic tubs or jars made to hold margarine, yogurt, whipped topping, and foods such as cream cheese, mayonnaise, and mustard are not microwave-safe.
- Microwavable takeout dinner trays are formulated for one-time use only and will say so on the package.
- Don't microwave plastic storage bags or plastic bags from the grocery store.
- Before microwaving food, be sure to vent the container: Leave the lid ajar, or lift the edge of the cover.
- Don't allow plastic wrap to touch food during microwaving because it may melt. Wax paper, kitchen parchment paper, or white paper towels are alternatives.
- If you're concerned about plastic wraps or containers in the microwave, transfer food to glass or ceramic containers labeled for microwave oven use.

July 2006 update

©2000–2006 President & Fellows of Harvard College
health.harvard.edu/fhg/updates/update0706a.shtml