

أثر استخدامات الأوعية البلاستيكية والميكروويف  
على سلامة الأغذية والصحة العامة.

## Impact of Application of Plastic Containers and Microwaves on Food Safety and Public Health

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# محتويات عنوان المحاضرة: **Topic Contents**

- **Food Materials** المواد الغذائية
- **Microwaves Application** استخدام المايكرويف
- **Plastic Containers** الحافظات اليلاستيكية

**Food:** is the major need for our daily life and survival requirements as well for other living organisms.

**Basic Conditions:**

- 1. Has a nutritional value**
  - **Protein, Carbohydrate, Lipid, Vits**
- 2. Clean from contamination**
- 3. Sufficient Quantity**
- 4. Free from toxic impurities**

# Microwave Application

- 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 warm or defrost or 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.

## 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. or if you have believe it will continue to operate with the door open.
- Refer to the instruction manual for your oven. Some microwave ovens should not be operated when empty.

# Plastic Material:

It is made of:

- organic compounds: Petroleum and industrial by-products like Dioxin
- inorganic compounds such as halogens: e.g. chlorine
- Additives to soften or harden the plastic material

# Question about Microwaving food in Plastic containers???

## Dangerous or not?

an urgent warning e-mail:

“PLEASE READ THIS!”

about the dangers of microwaving food in  
plastic containers or plastic wrap,  
or run across an article about it on a  
website



What is the **warning** message????

The message is that chemicals leaching out of the plastic into the food will cause cancer, reproductive problems, and other illness.

Is there any truth to this, or is it just another Internet-fueled “as modern myth”?

This **warning** contains a small kernel of truth — but a lot of misinformation.

The problem with that warning is that plastics don't contain dioxins.

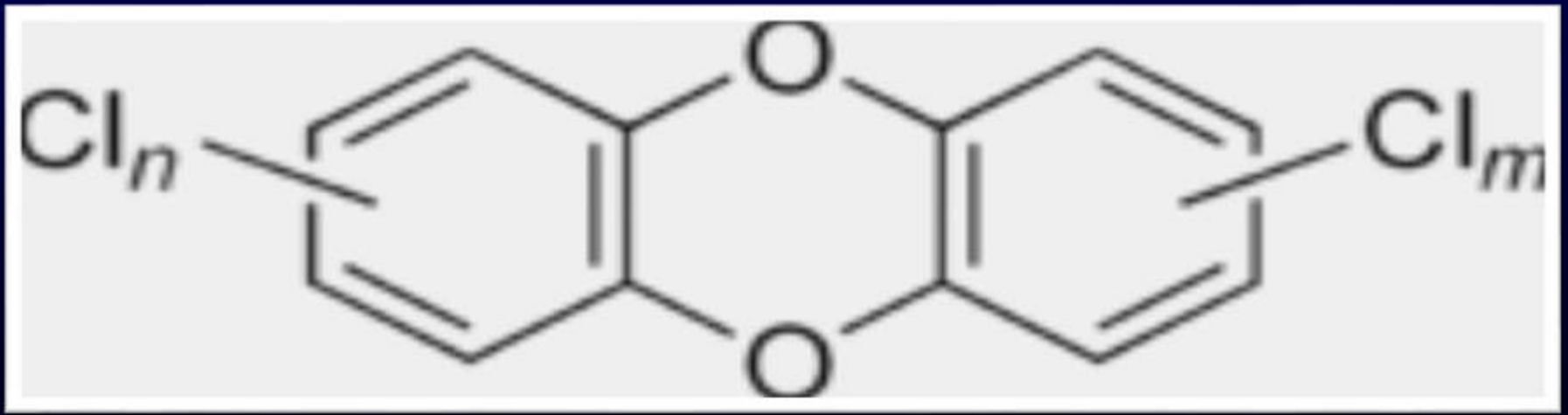
They are created when garbage, plastics, metals, wood, and other materials **are burned**.

As long as you don't burn your food in a microwave, you aren't exposing yourself to dioxins.

Dioxin: known as human carcinogen since 2001 and many researches since 1950s showed that dioxin impacts fetus development, damages the reproductive and immune systems.

**Dioxin: Polychlorinated dibenzodioxins,** or simply **dioxins**, are a group of polyhalogenated organic compounds that are significant environmental pollutants.

**Dioxins and dioxin-like compounds** are by-products of various industrial processes, and are commonly regarded as highly toxic compounds and environmentally persistent organic pollutants.



- Dioxins are absorbed primarily through dietary intake of fat, as this is where they accumulate in humans.
- The highly chlorinated dioxins are stored in fatty tissues and are neither readily metabolized nor excreted.
- The estimated elimination half-life for highly chlorinated dioxins (4–8 chlorine atoms) in humans ranges from 5 to 13 years.

# Migrating chemicals

There's no single substance called "plastic." That term covers many materials made from an array of organic and inorganic compounds.

Substances are often added to plastic to help shape or stabilize it.

Two of these plasticizers are

- **Bisphenol-A (BPA):**

added to make clear & hard plastic.

- **Phthalates:**

added to make plastic soft and flexible

**BPA and phthalates are believed to be**

- **Block the action of natural hormones**
- **Interrupting development & Fertility**

- **When food is wrapped in plastic or placed in a plastic container and microwaved, BPA and phthalates may leak into the food**
- **Any migration is likely to be greater with fatty foods such as **meats** and **cheeses** than with **other foods**.**



# According to the Medical Dictionary, BPA and phthalates : interfere with the

- Synthesis,
- Secretion,
- Transport,
- Binding,
- Action/elimination of natural hormones in the body that are responsible for development, behavior, fertility and maintenance of homeostasis (normal cell metabolism).

Also it is said about Bisphenol A (BPA): that is industrial chemical used in plastics. It too has been around for years.

According to the American Plastics Council web site,

"Bisphenol A is one of the most extensively tested materials in use today. The weight of scientific evidence clearly supports the safety of BPA with strong reassurance that there is no basis for human health concerns from exposure to BPA."

In developed countries like USA, the Food and Drug Administration (FDA):

- Recognized the potential for small amounts of plasticizers to impact food.
- They regulated plastic containers and materials that come into contact with food.
- They asked manufacturers to test these containers according to FDA standards and specifications tests to make them suitable for microwave uses.

# The standard tests required by FDA include the following:

- Measuring the migration of chemicals at temperatures that the container or wrap is commonly encounter by ordinary use
- For microwave approval, the agency estimate:
  - The ratio of plastic surface area to food,
  - How long the container is likely to be in the microwave and
  - How often a person is likely to eat from the container, and how hot to get during microwaving

- The FDA required to measure the chemicals that leach into food and the extent to which they migrate in 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 show a microwave-safe icon, labeled “microwave safe,” or approved use in microwave ovens.

# **The bottom line (recommendations):**

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

- If you're concerned about plastic wraps or containers in the microwave, transfer food to glass or ceramic containers labeled for use in microwave ovens.**
- Don't let plastic wrap touch food during microwaving because it may melt**
- Most takeout containers, water bottles, and plastic jars made to hold yogurt, whipped cream, and foods such as cream cheese, mayonnaise, and mustard are not microwave-safe.**
- Microwavable takeout dinner trays are formulated for one-time use only.**
- Old, scratched, or cracked containers, or those that have been microwaved many times, may leach out more plasticizers.**
- Don't microwave plastic storage bags or plastic bags from the grocery store.**
- Before microwaving, be sure to vent the container: leave the lid or lift the edge of the cover.**

- When food is wrapped in plastic or placed in a plastic container and microwaved, BPA and phthalates may leak into the food.
- Any migration is likely to be greater with fatty foods such as meats and cheeses than with other foods.







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# What the FDA Says about BPA????

The Food and Drug Administration (FDA) to play big brother to food packaging companies and keep a watchful eye on their practices, and their plastic. subject?

Basically, the FDA determines how much of a certain substance can you consume during your lifetime with little to no risk. So whether it's phthalates or bisphenol A or another chemical, the FDA's job is to make sure that the amount you're ingesting is within your safe limits. within safe limits.

## Conclusions:

- The dioxin urban legend is debunked, and while the experts have slightly different opinions on phthalates and bisphenol A, they do agree on one thing:

You don't need to throw out your frozen dinners or your plastic storage containers, and you should use your plastics as they're intended.

Our Question in Iraq: Is the quality control  
Doing their job correct with plastic products?

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CHRIS MADDEN

شكرا لاصغائكم

THANK YOU ALL FOR YOUR  
ATTENTION