

## **Microwave Oven Safety - What Are the Real Issues?**

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The persistence of myths and half-truths in consumers minds have plagued the microwave oven industry from its inception. First there was the worry of using aluminum trays that persists to this day despite evidence that they are perfectly safe. Then there was a worry about pacemakers and warnings still can be found in food service establishments and some government facilities despite there never having been a recorded case of a person wearing a pacemaker being injured by a microwave oven, while there have been incidents involving auto and lawn mower ignitions, electric shavers, elevators and other sources a large magnetic fields.

Then there was the worry about leakage from these appliances, with people claiming all sorts of injury. But that has mostly disappeared from consumers minds. It never made any sense to begin with and today's ovens are so well constructed that it is usually not possible to detect leakage except at one or more orders of magnitude below the allowable levels. This is properly put in perspective by a noted scientist who said it was like worrying about getting a tan from moonlight.

But are there things about which consumers should be concerned? Of course and they fall into two major categories : overheating and underheating.

**Overheating :** Microwaves heat in a very peculiar fashion. They are a form of energy, not heat, and create heat when interacting with materials. There is no temperature limit to their ability to heat, other than the destructive temperature of the material. They also heat both the inside and outside at the same time and, because the air in the oven is cold, the interior is usually hotter than the surface. Therefore, baking a potato can cause it to dry out in the middle and burst into flames. That is not something that happens very often. What we have watch out for are :

- Superheating - when the interior of a liquid or a food can exceed boiling temperature and suddenly erupts when disturbed, stirred, or a product such as instant coffee is added.
- Excessively high temperatures- in such things as high sugar or oil containing foods.
- Hidden high temperatures : a good example is baby food because the size and shape of the glass jar is such that the highest temperature will usually be in the middle. We have recorded temperatures of 200 F and higher while the glass surface was still cool to the touch. A number of such cases of injury to infants have been recorded in the medical literature.

d)Steam pressure buildup - this can occur in popcorn bags which fail to open during popping.

e) Fires - There have been cases of fires reported from such things as

popcorn. These are usually confined to the oven and are not serious.

Underheating : A major focus of attention in the UK is upon the possibility of microbiological problems resulting from improperly heated foods that may be contaminated with organisms such as Salmonella or Listeria Monocytogenes. Numerous incidents of food poisoning have occurred in the UK although none has involved microwave ovens. The concern is the unevenness of heating encountered in the microwave oven and the tendency for consumers to underheat foods in their desire for time savings. The fact is that conventional ovens heat unevenly also and if consumers are getting sick from these they must be underheating foods. In either microwave or conventional ovens proper handling and cooking will destroy microorganisms, that should not have been there in the first place.

So, are microwave ovens safe? Yes, when they are used properly and care is taken with certain foods. But then there is always the possibility that you could drop one on your foot.

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