

This Information Sheet provides guidance on using microwaves safely in a laboratory environment.

Microwave Hazards

Using microwaves in a lab is very similar to using microwaves at home.

You have to be just as careful of the general hazards associated with heating or using a microwave. For example, the heat from steam which can cause serious burns and never placing metal objects in the microwave.

HOWEVER, in a lab environment be very mindful of:



- Not everything is microwavable.
 - Some substances react and become volatile when heated.
 - Leaking microwaves.
 - Burns from vessels (used to hold substances) and substances that become hot.
 - Steam from substances or substances expanding and bubbling over.
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- Using unsuitable containers that lose their strength and then fail when handled.
 - Using dirty containers that contain residues of another substance that react with your substance, causing an exothermic reaction.
 - Reactions after heating eg placing a cold metal object in a boiling substance may cause an ejection of hot liquid.
 - Confusing signals ie the container may be cold but the substance inside may be very hot.
 - Toxic vapours from hot substances.



Items explode – this was a Mars Bar!



Burns from something that was microwaved and exploded



Steam

Using Microwaves Safely

The steps below should ensure your health and safety when microwaving items in a lab:

- **ALWAYS** refer to the COSHH and Risk Assessments before heating any substance.
- **NEVER** microwave flammable or toxic materials.



- **BE CAREFUL** when microwaving water – the water may not appear to be boiling but can explode when removed from the microwave.
- Use suitable (non-metallic), heat resistant containers.
- Never overfill containers.
- Use a suitable stopper¹ that stops bubbling over but also stops pressure build-up.
- Allow items to cool for **at least 30 seconds**² before removing them.
- Wear heat resistant gauntlets³ when removing items. Keep your lab coat sleeves tucked into the gauntlet so you don't get steam up the sleeve!
- Point containers away from yourself and others⁴ when removing from the microwave.
- Handle the container / substance carefully.
- If you think it is '*too hot to handle*' wait for it to cool a bit more.

1



2

Wait at least **30 secs**



3



4



FINALLY:



- If materials inside the oven ignite, **KEEP THE DOOR CLOSED**. If safe to do so, turn the oven off, disconnect the power cord and follow Fire Emergency Procedures.
- If you think something is wrong with the microwave, **STOP** using it, place a sign on it to ensure others don't use it and report it immediately to your Supervisor / Line Manager.

NEVER use lab microwaves to heat your lunch!