

Induction Cooking Safety & Radiation Concerns

Talking Points

[Induction range technology works](#) by having an electromagnetic field below the glass cooktop surface that transfers current directly to magnetic cookware, causing it to heat up. It cooks and responds faster than normal electric or gas stoves. While the gas industry continues to propagate uncertainty around the safety of induction stoves, research and studies shows otherwise.

1. **Induction stoves are significantly less likely to cause fires or burns.**
 - a. Induction cooktops do not have gas lines, so it is [inherently safer](#) than gas burners.
 - b. Induction stoves do not have hot coils and avoids combustion and open flames, making them more child safe than gas or other electric stoves.¹
 - c. Many induction ranges have safety features that turn burners off if no pot or pan is detected, among [other safety features](#).

2. **Induction stoves minimizes indoor air pollution compared to gas stoves. It also reduces the risk for carbon monoxide poisoning.**
 - a. Unlike gas stoves that produces nitrogen dioxide, carbon monoxide and formaldehyde, induction cook tops releases no fumes or gases.²
 - i. Indoor levels of these pollutants from gas stoves often exceed the safety limits set for outdoor air.³

3. **There is no evidence that the intermediate frequency (IF) electromagnetic fields (EMFs) from induction stoves impact long-term health, such as cancer.**
 - a. [EMFs](#) from an induction stove is the same sort as compact florescent lights ([25-50kHz](#)).
 - b. These are non-ionizing (low-level radiation) and do not damage DNA or cells directly nor have any cumulative effects.⁴
 - c. There is no known mechanism in which non-ionizing EMFs exposure could cause cancers.⁵

¹ Berkeley Climate Action Coalition, "Home Electrification Fact Sheet: Induction Stoves & Cooktops," 2019, https://ecologycenter.org/wp-content/uploads/2019/11/EWG-INDUCTION-FACT-SHEET_2019-11-12-1.pdf.

² Ibid.

³ Jennifer Logue et al., "Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California," *Environmental Health Perspective*, 2014, <https://ehp.niehs.nih.gov/doi/10.1289/ehp.1306673>

⁴ National Cancer Institute, "Electromagnetic Fields and Cancer," 2019, <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/electromagnetic-fields-fact-sheet#q2>

⁵ Ibid.

- i. The National Cancer Institute, the Institution of Engineering & Technology and the World Health Organization have all concluded in the same outcomes, although studies are ongoing.^{6,7,8}
- ii. Here is a [cumulative list](#) of statements made by experts and governments concerning health effects from EMS, all of which have similar conclusions.
- iii. The human studies that looked at the risks posed by EMFs from computer monitors have not identified any effect on health, though the extent to which these results can be extrapolated to induction stoves is limited due to the difference in terms of radiation they emit and the size of magnetic fields.⁹
- d. EMFs from induction stoves are at its lowest when appropriate cookware are used and they are completely aligned with the burner.

4. EMFs from induction stoves impact people with pacemakers differently.

- a. Studies that explored the effect of induction stoves on pacemakers have found mixed results.
 - i. “Under normal operating conditions, induction ovens should not cause interference with the performance of St. Jude Medical pacemakers and implantable cardioverter defibrillators (ICDs).”¹⁰
 - ii. “Patients are at risk if the implant is unipolar and left-sided, if they stand as close as possible to the induction cooktop, and if the pot is not concentric with the induction coil.”¹¹
 - iii. “In conclusion, this study shows no EMI risk of an induction oven in patients with bipolar or right-sided unipolar pacemakers.”¹²
- b. It is recommended to keep at least 60cm (2ft) of distance between the stovetop and pacemaker.¹³ Even a distance of 5-10cm (2-4in) from the stove can greatly reduce exposure to magnetic fields.¹⁴

⁶ National Cancer Institute, “Causes and Prevention,” <https://www.cancer.gov/about-cancer/causes-prevention>.

⁷ The Institution of Engineering & Technology, *Electromagnetic Fields and Health*, 2016, <https://www.theiet.org/media/3104/emfhealth.pdf>

⁸ World Health Organization, “Electromagnetic fields and public health,” 2007, <https://www.who.int/peh-emf/publications/facts/fs322/en/>.

⁹ Federal Office of Public Health FOPH, Switzerland Federal Department of Home Affairs, “Induction hobs,” 2016, <https://www.brooklinema.gov/DocumentCenter/View/20416/faktenblatt-induktionskochherd-e?bidId=>.

¹⁰ St. Jude Medical Technical Services, “Effects of Induction Ovens on St. Jude Medical Implantable Cardiac Rhythm Devices,” 2012, <https://professional.sjm.com/~media/pro/resources/emi/personal-office/fl-induction-oven-042012.pdf>.

¹¹ Werner Irnich and Alan D Bernstein, “Do induction cooktops interfere with cardiac pacemakers?,” *Europace*, 2006, <https://pubmed.ncbi.nlm.nih.gov/16635999/>.

¹² Hans Rickli et al., “Induction ovens and electromagnetic interference: what is the risk for patients with implanted pacemakers?,” *Pacing Clin Electrophysiol*, 2003, <https://pubmed.ncbi.nlm.nih.gov/12914627/>.

¹³ British Heart Foundation, “Can I use an induction hob if I have a pacemaker?,” <https://www.bhf.org.uk/information-support/heart-matters-magazine/medical/ask-the-experts/induction-hobs-and-pacemakers>.

¹⁴ Federal Office of Public Health FOPH, Switzerland Federal Department of Home Affairs, “Induction hobs,” 2016, <https://www.brooklinema.gov/DocumentCenter/View/20416/faktenblatt-induktionskochherd-e?bidId=>.

- c. Consult a physician before buying an induction stove, if applicable. If necessary, traditional electric stoves may be bought instead of an induction stove.
- 5. EMFs from inductions stoves may not be suitable for patients with insulin pumps.**
- a. EMFs can damage the insulin pump’s motor that regulates insulin delivery, causing over-delivery and ultimately, hypoglycemia.¹⁵
 - b. It is recommended that patients should contact their pump manufacturer before purchasing an induction range.
- 6. Though limited, studies show that induction stoves do not harm pregnancies and children.**
- a. “The results show that the magnetic fields produced by induction cookers do not cause the basic restriction for the internal electric field (ICNRIP 2010) to be exceeded in children and fetuses.”¹⁶
 - b. Human epidemiological studies show that IF EMFs do not interfere with reproductive processes or pregnancy outcomes.¹⁷
 - i. Laboratory studies also show there is no clear evidence for increased malformations.¹⁸

¹⁵ JDRF, “Is there a serious risk to your insulin pump in your kitchen?,” 2017, <https://jdrf.org.uk/news/induction-hob-magnetic-field-danger-insulin-pump/>.

¹⁶ http://www.inis.si/fileadmin/user_upload/INIS/publikacije/2011_08_30_Bor_PMB.pdf

¹⁷ World Health Organization, “Electromagnetic fields & public health: Intermediate Frequencies (IF),” 2005, <https://www.who.int/peh-emf/publications/facts/intmedfrequencies/en/>.

¹⁸ Ibid.