

E-cigarette Toxicity and Health Effects – How to Communicate Scientific Evidence to Politics and the Public

Irina Treede^{a,b}, Sarah Kahnert^a, Katrin Schaller^a

^a Cancer Prevention Unit and WHO Collaborating Centre for Tobacco Control, German Cancer Research Center (DKFZ), Heidelberg, Germany | ^b irina.treede@dkfz.de

Research for a Life without Cancer

Introduction

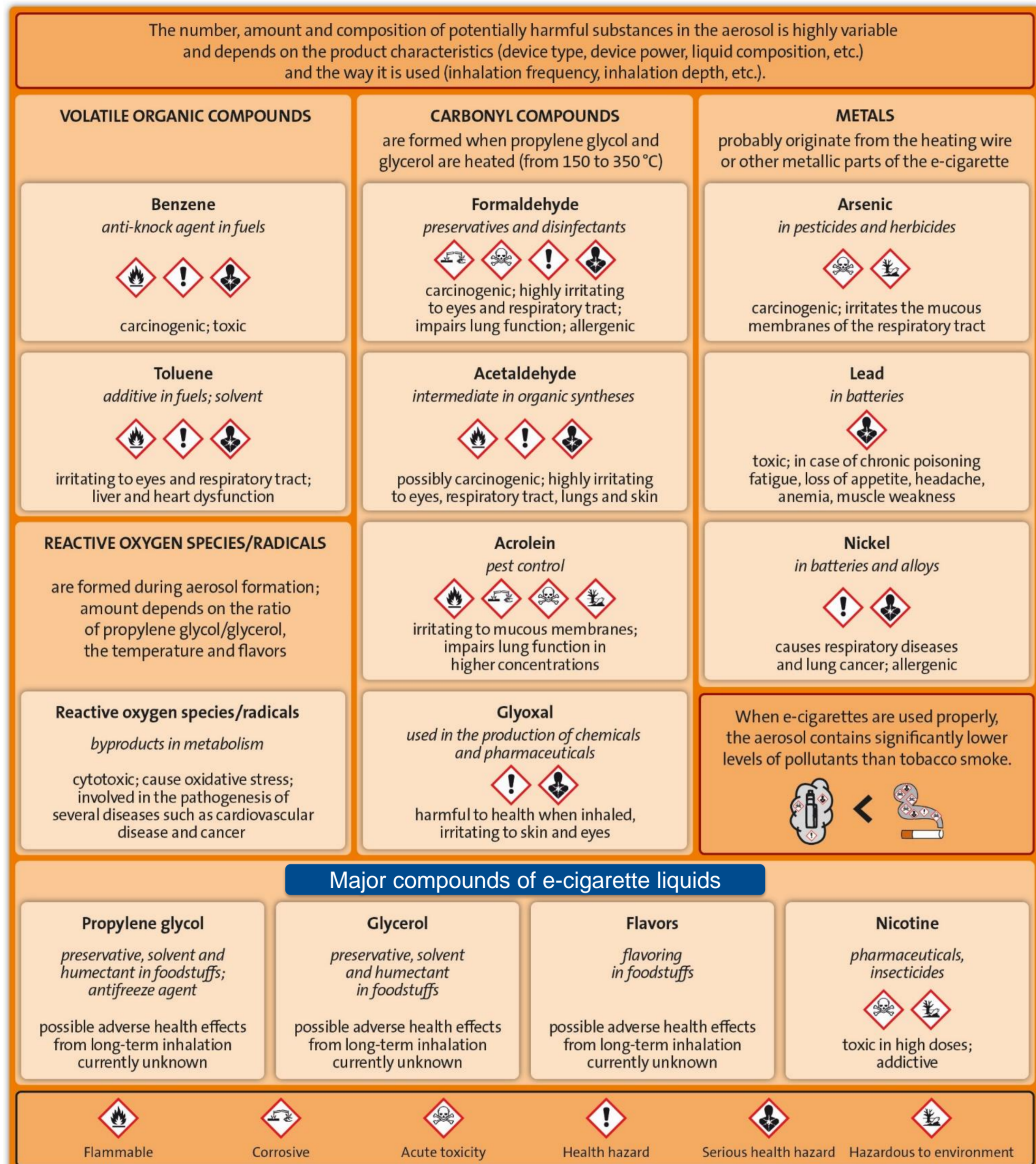
Recently, the use of e-cigarettes has increased in Germany, including among youth, and threatens to compromise tobacco control efforts. Regulation of e-cigarettes to protect public health needs to be based on scientific evidence. Therefore, political decision makers, public health advocates, and journalists need information that is both scientifically sound and easy to understand.

The aim of the project is to compile a report on the health effects of e-cigarette use to support political decisions on e-cigarette legislation.

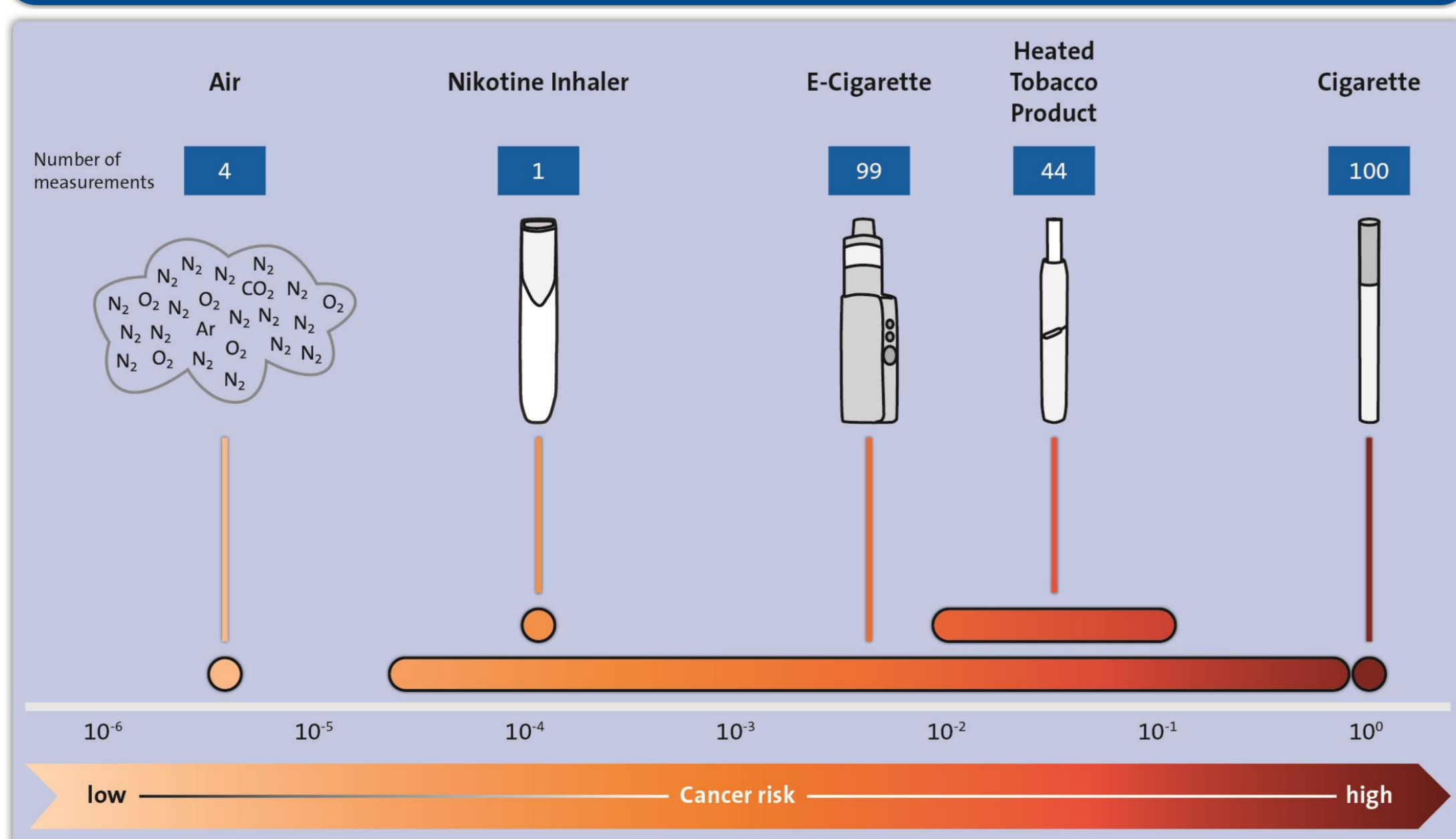
Methods

A comprehensive, non-systematic review of recent studies on the health effects and addictive potential of e-cigarettes was conducted. The scientific evidence is translated into easily understandable language and illustrative graphics.

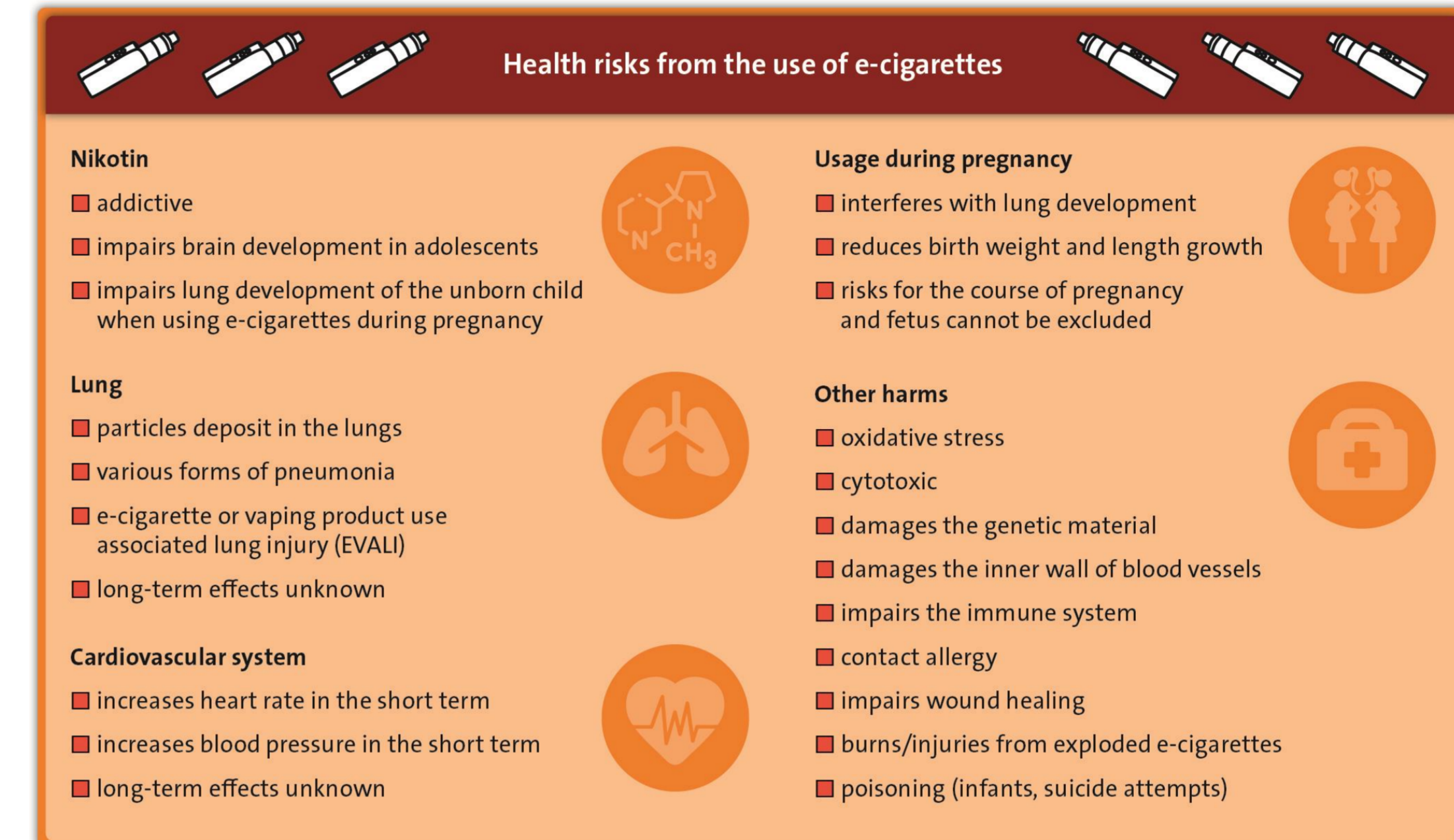
Selected harmful substances emitted from e-cigarettes



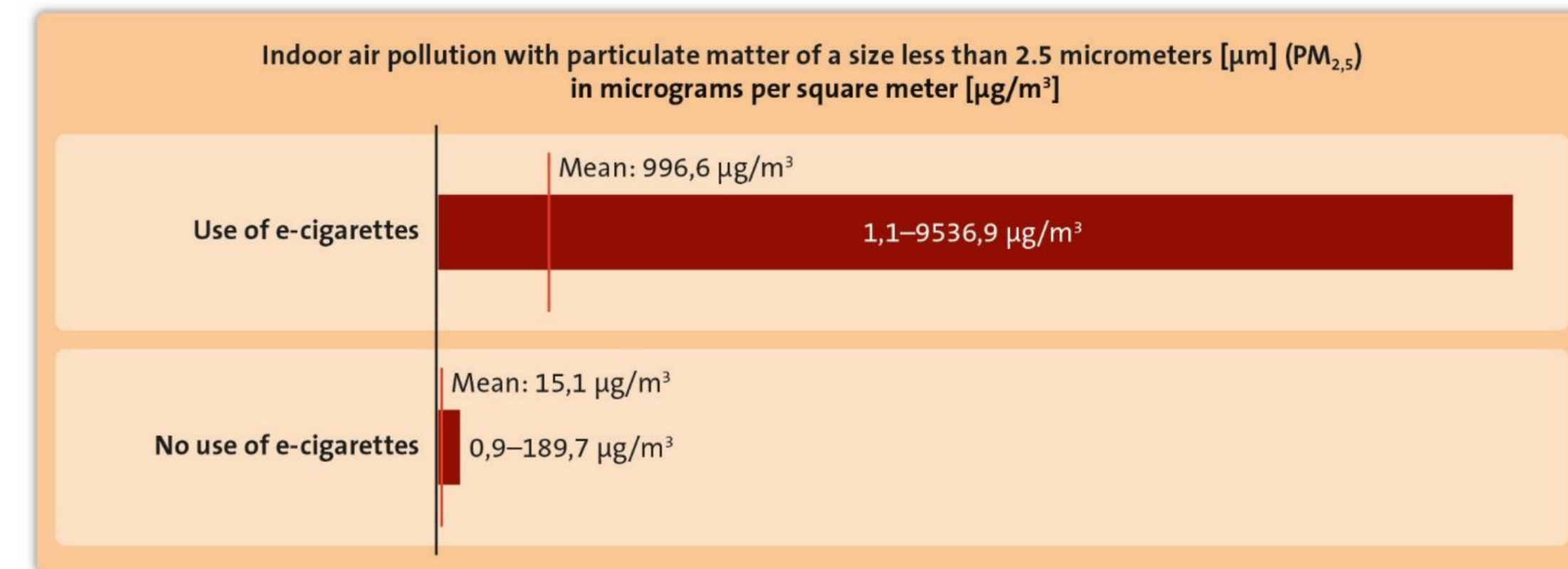
Estimated cancer risk of emissions from e-cigarettes compared to tobacco/nicotine products and air



Health effects of e-cigarette use



Effects of e-cigarette use on home air quality



Recommendations for e-cigarette regulation in Germany

- Point of sale advertising ban
- Display ban
- Plain packaging
- Ban on vending machines
- Inclusion in smokefree legislation
- Ban on disposables
- Sales in licensed shops only

Results

E-cigarette aerosol contains besides nicotine, particulate matter, carcinogens, heavy metals (i.e., lead), and volatile organic compounds. Some of the toxicants can cause inflammation, oxidative stress, or DNA damage. E-cigarette aerosol might increase the risk of various cardiovascular and respiratory diseases. Nicotine is addictive, and nicotine exposure in youth can affect brain development. Exposure to second-hand e-cigarette aerosol might be harmful to vulnerable bystanders.

Conclusions

More studies are needed on the long-term health effects of e-cigarette use. In Germany, several new e-cigarette regulatory policies are needed, particularly to protect adolescents from initiating e-cigarette use.