

How does nicotine affect health, and why are e-cigarettes and e-shishas accompanied by health risks?

Nicotine is not harmless. In fact, it is toxic and entails serious health risks – even if it is consumed by delivery devices such as e-cigarettes without the toxic substances contained in tobacco smoke. Nevertheless, nicotine-containing electronic inhalation devices are marketed as a safe alternative to cigarettes to smokers as luxury items and to young people as lifestyle accessories. The German Cancer Research Center (DKFZ) has issued two new publications that present comprehensive facts about nicotine and e-cigarettes.

A new publication by the Cancer Prevention Unit of the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) in Heidelberg shows that nicotine is not only physically and mentally addictive but is also suspected to promote atherosclerosis, type 2 diabetes and cancer. Numerous research publications have provided evidence that nicotine causes cancer, boosts its progression and adversely affects the outcomes of chemotherapy and radiotherapy treatments. Nicotine can have serious, long-term and harmful effects on the course of a pregnancy and the health of an unborn child. Nicotine consumed during pregnancy is associated with sudden infant death and impairs the later development of the brain and lungs.

“Nicotine is anything but a harmless substance, as manufacturers of e-cigarettes tend to make us believe,” says Dr. Verena Viarisio, who is a staff scientist at the DKFZ’s Cancer Prevention Unit and the author of the present fact sheet on nicotine as a health risk. “Nicotine is toxic, addictive and harmful to health in many ways. Young people and pregnant women in particular should neither smoke nor use e-cigarettes.”

The DKFZ has also issued another publication on the health hazards of e-cigarettes and e-shishas in collaboration with the Bavarian State Office for Health and Food Safety. The authors evaluated numerous studies providing evidence that the health hazards from the use of e-cigarettes result from three factors: the mixture of chemicals made up of carrier substances, flavors and nicotine; individual user behavior; and the technology of delivery devices. For example, levels of substances that are carcinogenic or potentially carcinogenic such as formaldehyde and acetaldehyde in the aerosol of an e-cigarette increase with the rising temperature of the vaping device. This temperature, in turn, is determined by the device’s battery voltage and the vaping behavior of the user.

“E-cigarettes and e-shishas do not belong in the hands of children,” says Associate Professor (PD) Dr. Wolfgang Schober, a staff scientist at the Bavarian State Office for Health and Food Safety and the principal author of an overview publication entitled “E-Zigaretten und E-Shishas: Welche Faktoren gefährden die Gesundheit?” (E-cigarettes and e-shishas – what are the factors that may cause health problems?). “We therefore welcome the venture by the Federal Ministry of Family Affairs to ban the sale of e-cigarettes and e-shishas to children and youth. For the safety of adult consumers, we urgently need to introduce minimum technical standards.”

The publications “Gesundheitsrisiko Nikotin” (Nicotine as a health risk) and “E-Zigaretten und E-Shishas: Welche Faktoren gefährden die Gesundheit?” (E-cigarettes and e-shishas – what

are the factors that may cause health problems?) are available as pdf files for download at <http://www.tabakkontrolle.de>.

The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) with its more than 3,000 employees is the largest biomedical research institute in Germany. At DKFZ, more than 1,000 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. The staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. Jointly with Heidelberg University Hospital, DKFZ has established the National Center for Tumor Diseases (NCT) Heidelberg, where promising approaches from cancer research are translated into the clinic. In the German Consortium for Translational Cancer Research (DKTK), one of six German Centers for Health Research, DKFZ maintains translational centers at seven university partnering sites. Combining excellent university hospitals with high-profile research at a Helmholtz Center is an important contribution to improving the chances of cancer patients. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg.

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