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Environmental Health Perspectives in Electronic Cigarette Use: A Sustainable Approach

Emmanuel Teryila Tyokumbur[1*] & Thomas Terseer Ngor[2]

[1]Ecology and Environmental Biology Unit, Department of Zoology, University of Ibadan, Ibadan, Nigeria.
[2]Industrial Training Fund (ITF), Jos, Plateau State, Nigeria.

Abstract

A review is carried out on environmental health perspectives in electronic cigarettes using a sustainable approach. Electronic cigarette (EC) use continues to increase with time from its first introduction in 2004 and could have either deleterious or beneficial effects on public health depending on its impact on smoking initiation and cessation. Previous reports have described conditions of EC use that support minimal or no nicotine delivery as a placebo for tobacco use cessation. This review underscores the need for effective surveillance of e-cigarettes and their effects on smoking, users' health and a smoke-free policy.

Keywords*: Electronic cigarette, public health, nicotine, cigarette.*

Introduction

Cigarette smoking is the most portent and addictive cause of avoidable deaths in the world since quitting is known to significantly reduce the risk of deadly diseases such as lung cancer, acute coronary artery disease, strokes, end-stage chronic obstructive pulmonary disease and several other types of cancers (U.S. Department of Health and Human Services,2015; Russo *et al.,* 2016). According to the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), abstinence and stern warnings about the fatality of smoking on cigarette pack labels remain one of the key actions to reduce health burden associated with combustible tobacco (WHO, 2003; Caponnetto et al, 2012).Although emerging smoking cessation drugs are known to increase the chances of quitting smoking, particularly if combined with counseling programs, the emergence of electronic cigarette use has often being asserted as a supportive withdrawal method though controversial (Bullen et al 2008;Pelossa and Benowitz, 2011; Caponnetto et al, 2012) .Electronic cigarettes (ECs) are a diverse range of battery operated devices that vaporise nicotine for inhalation that have been purchased and used by millions of people since their introduction in 2004 (Bullen et al 2008). However, the place of ECs in tobacco control is controversial and ethically debatable (Cobb and Cobb, 2013, Hajek et al, 2013). Studies have shown that studies show ECs are capable of delivering nicotine into the bloodstream, and attenuating tobacco withdrawal as effectively as nicotine replacement therapy (NRT) (Bullen et al 2010).

Environmental health issues associated with electronic cigarettes

The electronic delivery system of nicotine commonly called electronic cigarette or e-cigarette (EC) is a plastic device that is designed to imitate a conventional cigarette and to deliver a nicotine containing aerosol dose whenever puffed by the user (Goniewicz et al,2012). However, little is known about the health impact of the product or the extent of its use (King et al, 2013). Goniewicz et al (2012) showed that although ECs generate vapor that contains nicotine, EC brands and models differ in their efficacy and consistency of nicotine vaporization. Thus, in ECs that vaporize nicotine effectively, the amount inhaled from 15 puffs is lower compared with smoking a conventional cigarette. Quantitatively, Goniewicz et al (2012) found that the total level of nicotine in vapor generated by 20 series of 15 puffs varied from 0.5 to 15.4 mg, while most of the analyzed ECs effectively delivered nicotine during the first 150–180 puffs with an average, 50%–60% of nicotine from a cartridge which was vaporized. In a study by King et al (2013), awareness and ever use of e-cigarettes increased among U.S. adults from 2010 to 2011 with approximately 1 in 5 current smokers reported to have once used e-cigarettes. The environmental health impact of e-cigarette (EC) use on human health remains unpredictable (Etter et al, 2011). Although some research has shown that e-cigarettes are most frequently used as a smoking cessation aid that might alleviate the desire to smoke after abstinence which may reduce cigarette consumption and encourage short periods of smoking abstinence (Bullen et al., 2010;Etter, 2010; Caponnetto et al, 2011; Polosa et al., 2011; Siegel et al, 2011). E-cigarettes are presently unregulated and are produced by numerous small manufacturers that mostly market it online (Etter et al, 2011).

Conclusion

Since nicotine based products have been shown to have varying degrees of environmental health impacts, there is the need for continued surveillance of e-cigarettes as an essential component for public health planning. This is

more so since nicotine is a highly addictive substance with e-cigarette explosions causing varying degree of burns and face wounds when it does explode.

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