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Subject: Bill 60

Electronic cigarettes are becoming more and more popular, both with smokers who are wishing to quit and smokers who dislike analog cigarettes but wish to continue exhaling something that closely resembles smoke. While some are quick to jump headlong into new products and devices, there are others who wait for research on the the safety of these new devices before jumping on the bandwagon. Due to these concerns, many leading scientists and health experts around the world have researched the safety of ejuice, second-hand vapor, and the effectiveness of e-cigarettes as a smoking cessation device.

Whether you are a smoker looking for a way to quit, a smoker who detests the taste and smell of analogs, someone who is worried about breathing in e-cigarette vapor, or someone who is wanting flavor and taste without the calories or allergens, the studies compiled below should help to alleviate any of your fears regarding the use of e-cigarettes and e-juice.

Contrary to claims being made in the media by some politicians and health advocates, the so-called "candy flavors" made for e-cigarettes were not developed by tobacco companies to lure and hook youth, but were a response from small, independent ecigarette companies to requests from mature smokers seeking better flavors and alternatives to "tobacco" and "menthol." I was one of them.

The first non-tobacco flavor I bought, about a week after getting my e-cigarette, was Cappuccino. Then I bought mocha and French vanilla flavors. Use lots of flavors in my day-to-day life like - mint chocolate chip, butterscotch, peanut butter, strawberry, and peach. I was 37 years old at the time I first switched to an e-cigarette and I am now 39 - hardly a "youth." It wasn't until I had access to these flavors that I lost all desire for regular cigarettes. In fact, that flavor of burning tobacco that I once loved now tastes terrible to me. I cannot imagine how flavors such as strawberry and key lime pie could act as a "gateway" to smoking. It's like claiming that virgin strawberry margaritas could be a gateway to drinking shots of tequila.

Safety evaluation and risk assessment of electronic cigarettes as tobacco cigarettes substitutes: A systematic review: A total of 114 studies are referenced in this paper, with 97 directly related to e-cigarettes or their ingredients. The review covers all aspects, from chemical to clinical studies, including studies evaluating the potential effects of selected ingredients of e-cigarettes such as propylene glycol and glycerol. It includes discussion about the effects of nicotine and findings from studies evaluating passive exposure to e-cigarette aerosol. This is the first extensive e-cigarette review published in a peer-reviewed medical journal. The main themes of the paper are: discussion about nicotine and its effects-toxicity, presentation of chemical studies, cytotoxicity studies, clinical-case report studies and surveys, passive vaping studies and miscellaneous issues such as e-cigarette use by specific subpopulations (patients with respiratory disease or psychiatric conditions), accidental nicotine exposure, electrical accidents and fires and use by youngsters and non-smokers. Discussion about mistakes in methodology and mis-interpretation of findings is also included.

Long-term effects of inhaled nicotine: A study where rats were given inhaled nicotine at twice the amount of heavy smokers, which found "increase in mortality, in atherosclerosis or frequency of tumors in these rats compared with controls. Particularly, there was no microscopic or macroscopic lung tumors nor any increase in pulmonary neuroendocrine cells. Throughout the study, however, the body weight of the nicotine exposed rats was reduced as compared with controls. In conclusion, our study does not indicate any harmful effect of nicotine when given in its pure form by inhalation."

Nicotine and Health: a publication by the American Council on Science and Health: Listed below are some quotes from the publication that pertain to e-cigarettes.

Cancerous effects:

Electronic cigarette vapor appears chemically incapable of causing cancer as cigarette smoke has done. E-cigarette vapor contains toxicants concentrations averaging less than one percent of the concentrations in tobacco cigarette smoke.

Taxation efforts:

Governments looking to recoup future excise losses on declining tobacco sales could be tempted to tax e-cigarettes. This would make electronic cigarettes less price-competitive and would have the unwanted side effect of protecting tobacco sales.

Respiratory effects:

These randomized controlled trials followed participants for six and 12 months, and found no serious adverse events attributable to electronic cigarettes.

Lung function:

Lung function was not significantly decreased in 15 smokers using e-cigarettes, or in 15 never-smokers inhaling the vapor of e-cigarettes or inhaling smoke; lung function was, however, significantly decreased seven percent by active tobacco smoking.

Cardiovascular:

Arterial stiffness is not increased from vaping

Red and white blood cells are not increased in the peripheral blood in the first hour after an e-cigarette either actively or passively inhaled.

Nicotine administered by electronic cigarette can relieve chronic idiopathic neutrophilia

Brain effects:

Nicotine in e-cigarettes reduces the urge to smoke and improves mood, working memory, and prospective memory

Second-Hand Vapor Safety: Is Vapor Safe for Others?

Peering Through the Mist: Systematic Review of what the Chemistry of Contaminants in Electronic Cigarettes Tells Us about Health Risks: A comprehensive review, by a Drexel University professor, based on over 9,000 observations of e-cigarette liquid and vapor. He found "no apparent concern" for bystanders exposed to e-cigarette vapor - even under "worst case" assumptions about exposure.

Contaminants In Ecig Eliquids And Workplace Health Risks (PDF): A study that reviewed available data on chemistry of e cig aerosols and e liquids. This study found no evidence supporting the claims of e cigarette

vapor exposure negatively effecting the health, and safety, of the workplace. Published January 2014.

Cytotoxicity evaluation of ecig vapor extract: A 2013 study designed to evaluate the cytotoxic potential of 21 e-liquids compared to the effects of cigarette smoke found ecig vapor is significantly less cytotoxic compared to tobacco.

Ecigarette toxicants study: Levels of selected carcinogens and toxicants in vapour from electronic cigarettes have been found to be 9 to 450 times less than tobacco cigarettes in 12 brands studied; leading the researchers to conclude "substituting tobacco cigarettes with e-cigarettes may substantially reduce exposure to selected tobacco-specific toxicants". The study was first published online on March 6, 2013.

Is Passive Vaping A Reality?: This study sought to identify and quantify the chemicals released on a closed environment from the use of e-cigarettes - the findings? There's little to be concerned about with regard safety. This research again confirms the type and quantity of chemicals released are by far less harmful to human health compared to regular tobacco cigarettes. In fact, it "could be more unhealthy to breath air in big cities compared to staying in the same room with someone who is vaping."

Indoor Vapor Air Quality Study: Data at Clarkson University's Center for Air Resources and reviewed by an independent toxicologist indicates electronic cigarettes produce very small exposures to byproducts relative to tobacco cigarettes. The study has been peer reviewed and will appear the Journal of Inhalation Toxicology.

E-cigarettes: harmless inhaled or exhaled: Report from Health New Zealand stating e-cigarette vapors do not contain substances known to cause death in the quantities found.

Society for Research on Nicotine and Tobacco (PDF): This research acknowledges that no drug is safe, but the emissions associated with the e-cigarette brand tested appear to be "several magnitudes safer" than tobacco smoke emissions.

E-cigarette Vapor And Cigarette Smoke Comparison: High nicotine e-liquids were vaporized in a series of experiments and the emissions compared to tobacco smoke. The study results indicate "no apparent risk to human health from e-cigarette emissions based on the compounds analyzed".

Propylene Glycol Safe: Monkeys and rats were exposed continuously to high concentrations of propylene glycol, a common component of e liquids for periods of 12 to 18 months. Results of the research state "air containing these vapors in amounts up to the saturation point is completely harmless".

E-Cig and E-Juice Safety: Are They Safe?

Scientific Errors in the Tobacco Products Directive: A letter sent by the very scientists whose research was cited by the EU Commission to draft legislation geared towards ecigarettes and their usage. The letter details the many ways in which their research was wrongly used and misinterpreted.

Ecigs Do Not Stiffen Arteries (PDF): Researchers from Onassis Cardiac Surgery Center in Greece have found that while smoking just 2 tobacco cigarettes caused significant stiffening of the aorta, no difference was

observed after the use of an e-cigarette by smokers AND vapers. Published December 2013.

Smoking Kills, and So Might E-Cigarette Regulation: Gilbert Ross MD, is a medical and executive director of the American Council on Science and Health. In this special report on The American, he states "simple common sense would dictate that inhaling the fewer, less harmful ingredients of e-cigarettes as compared to inhaling the thousands of chemicals in the smoke from burnt tobacco, many of which have been shown to be carcinogenic, is highly likely to be healthier." Published November, 2013.

Research on Safety of Electronic Cigarettes (PDF): Dr. Konstantinos Farsalinos' comprehensive presentation on existing data relating to the safety of ecigarettes. Presented at The E-Cigarette Summit, Royal Society, London in November 2013.

Nicotine Safety in the Context of E-Cigarette Use (PDF): Contrary to popular belief, the fatal overdose level for nicotine may be far higher than the generally accepted 50 to 60 mg (adult) says Dr. Jacques Le Houezec. This research was presented at the The E-Cigarette Summit, Royal Society, London in November 2013.

E-Liquids Shown To Have Low Cytotoxicity (PDF): The results of testing of 20 e-liquids, has revealed the majority of the vapor samples were found to have no adverse effects on cardiac cells. Even on the several that did have some effect (two of which were tobacco derived), the worst was 3 times less toxic compared to cigarette smoke. Published October 2013 in the International Journal of Environmental Research And Public Health.

Nicotine Levels Selection and Patterns of Electronic Cigarette Use: Study from Dr. Konstantinos E. Farsalinos that concludes nicotine levels seem to play a crucial role in achieving and maintaining smoking cessation in a group of motivated subjects. The study involved 111 participants who completely substituted smoking with electronic cigarette use for at least 1 month. Published September 2013.

Vaping: coronary circulation and oxygen supply (PDF): Recent research indicates that electronic cigarette use does not affect the oxygenation of the heart. Lead by principle investigator Dr Konstantinos Farsalinos; results of the research were presented at the European Society of Cardiology annual congress in Amsterdam in August, 2013.

Eliquids: No Health Concerns: A study by Professor Igor Burstyn of Drexel University School of Public Health based on a review available data has confirmed chemicals generally found in ecig eliquids pose no health concerns. Published August 2013 (PDF).

MHRA Ecigarette Research: The UK's Medicines and Healthcare Products Regulatory Agency (MHRA) carried out extensive research on ecigarettes, arriving at the conclusion there was little concern that e-cigarettes can harm users by delivering toxic nicotine levels and little evidence of non-smokers taking up electronic cigarettes. Published in June 2013.

Evaluation of Electronic Cigarette Use And Liquid Consumption: This 2013 study challenges an EU proposal that would result in eliquids containing more than 4 milligrams of nicotine per milliliter being banned unless approved as medicinal products.

Electronic Cigarettes Do Not Damage The Heart: Electronic cigarettes appear to have no acute adverse effects on cardiac function according to research by cardiologist Dr Konstantinos Farsalinos. He says based on

currently available data, ecigs are safer and that substituting tobacco with electronic cigarettes could be beneficial to health.

Principles to Guide AAPHP Tobacco Policy: The American Association of Public Health Physicians recommends electronic cigarettes as a safer smoke-free tobacco/nicotine product.

Athens University Ecig Study Challenged: Dr. Michael Siegel questions a University of Athens study claiming e-cigarettes can cause lung damage.

Regulation: When Less Is More (PDF): Presentation slides from Clive Bates (of the Counter-factual) concerning the dangers of over-regulating ecigarettes. Mr Bates urges positively about the vast potential about e cigs, to put the (minor) risks in perspective and regulate as though the 1 billion who are predicted to die from tobacco related illnesses in the 21st century matter most. Presented at The E-Cigarette Summit, Royal Society, London in November 2013.

Vaping profiles and preferences: 1,347 vapers were surveyed in an effort to characterize e-cigarette use, users and effects. Results generally showed respondents found ecigarettes to be satisfying to use; cause few side effects; considered healthier than smoking, resulted in improve cough/breathing and lowered levels of craving. The survey was hosted at the University of East London. Published March 2013.

Thank You



Stephen Lotherington CD